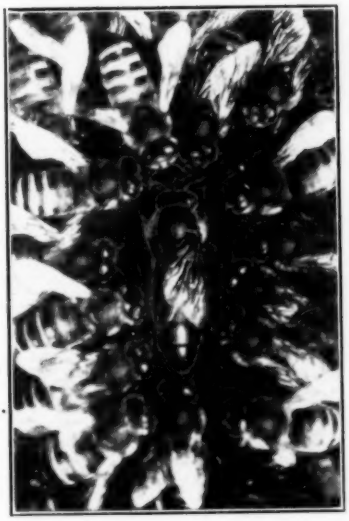
Gleanings in Bee Culture



PLAINT OF THE QUEEN BEE.

Workers, oh sisters striving near,
Envy not me whom ye serve here.
Queen but in name. A slave I fill
The endless cradles of your will.
Proudly I soared up to the sun
And with my lover bold was one.
But for that rapturous moment I
Burdens must bear and prisoner, die.
You may fare forth to nectar sip
On many a soft and bloomy lip;
May rest on many a golden heart,
Causing its flow'ry dreams to start.
Workers, oh sisters striving near,
Envy not me whom ye serve here.
Queen am I none; I strive to fill
The endless cradles of your will.
No more the blue, where you take flight,
Only my dreams and endless night.

—Romanie Van de Poele.

Vol. LI. July, 1923 No. 7

Better Way to Garden

Don't do garden work the slow back-breaking way. You can grow a far better garden, easier and with much less time and work.

BARKER

WEEDER, MULCHER AND CULTIVATOR

THREE MACHINES IN ONE

Simply push the BARKER along the rows (like a lawn mower). Eight blades revolving against a stationary underground knife destroy the weeds and in same operation break up the surface crust into a **level, porous, moisture-retaining mulch.** Aerates soil. Intensive cultivation. "Best Weed Killer Ever Used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

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Let us tell you about this machine and how to raise bigger, better gardens—make gardening a pleasure. A valuable book, illustrated. Gives prices, etc. A card brings it. Write us today. Use coupon below.

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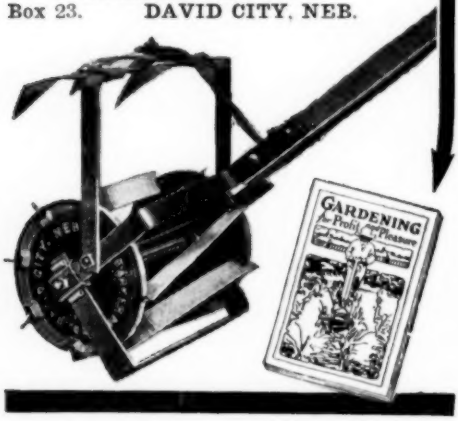
Box 23. DAVID CITY, NEB.



Barker Mfg. Co., Box 23, David City, Neb.

Gentlemen: Send me postpaid your free booklet and Factory-to-User offer.

Name .....

Town .....

State ..... RFD or Box.....

$1 $1

Major's Improved Queens of Supreme Quality

Just think of it, only $1.00 each for my bright three-banded northern-bred Italian queens! After 20 years of select breeding, I have produced a strain of bees that get the honey and stand the northern winters.

The kind of letters I receive daily:

"Muskegon, Mich., April 25, 1923.

"Mr. Major, South Wales, N. Y.

"Dear Sir: Enclosed find P. O. order for $23, for which please send me 23 select untested, bright three-banded Italian queens. The other queens I got from you were very satisfactory. Respectfully yours, Hugh C. Flanagan, 436 Forest Ave."

I guarantee pure mating, safe arrival, free from disease, and health certificate furnished with shipment.

All candy in queen-mailing cages mixed to government regulations.

All orders greatly appreciated and acknowledged the same day as received.

Order now to avoid delay.

SELECT untested from 1 to 100, $1 each.

Make all foreign money orders payable to postoffice of East Aurora, N. Y. (not including Canada).

H. N. Major, South Wales, N. Y.

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THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

Geo. S. Demuth and E. R. Root, Editors
H. H. Root, Assistant Editor
H. G. Rowe, M'n'g Editor

XUM

Money Saved
Time Saved

Bee Supplies

Root's Goods at factory prices with WEBER'S service. Send us a list of your wants and we will quote you prices that will save you money.

C. H. W. Weber & Co.

2163-65-67 Central Ave.
Cincinnati, Ohio

In a Hurry?

It is now that time of the year when your bees should not be deprived of supplies. Delays at this late date are costly. TRY OUR SERVICE!

"SUPERIOR" FOUNDATION.—Made from WESTERN beeswax exclusively. It is unequaled for **tensile strength, color, texture and uniformity.**

"SUPERIOR" HOFFMAN FRAMES.—For the beekeeper who wants an extra good frame at a very moderate price. Let us prove it.

"SUPERIOR" BEEHIVES AND SUPERS.—Accurately and neatly made from WESTERN white pine—strictly clear. Our price is less.

"SUPERIOR" COMB-HONEY SHIPPING CASES.—A first-class case—glass front or plain—at an extra low price.

"SUPERIOR" EXTRACTED-HONEY SHIPPING CASES.—Yes, we make them—in all sizes.

"SUPERIOR" BEE GLOVES WITH LEATHER PALMS.—Protection and wearing qualities are combined. $1.50 per pair postpaid.

"SUPERIOR" CYLINDRICAL BRISTLE BRUSHES.—Made of light grey bristles tightly bound in heavy wire. Bristles will not loosen. 65c each postpaid.

"SUPERIOR" METAL EYELETS FOR FRAMES.—Insert them yourself. They stay "put." Per 1,000, 75c. Tool for inserting, 25c postpaid.

"SUPERIOR" WIRE AND CLOTH VEILS.—A REAL Veil. Used exclusively in our own apiaries for several years. $1.55 postpaid.

"LEWIS-MARKLE" and "ROOT" EXTRACTORS, "LEWIS" COMB HONEY SECTIONS "AMERICAN" HONEY CAN AND PAILS, "BINGHAM" AND "ROOT" SMOKERS.

Superior Honey Company, Ogden, Utah

Manufacturers of Beekeepers' Supplies

Branches at Idaho Falls, Idaho, and Riverside, California.

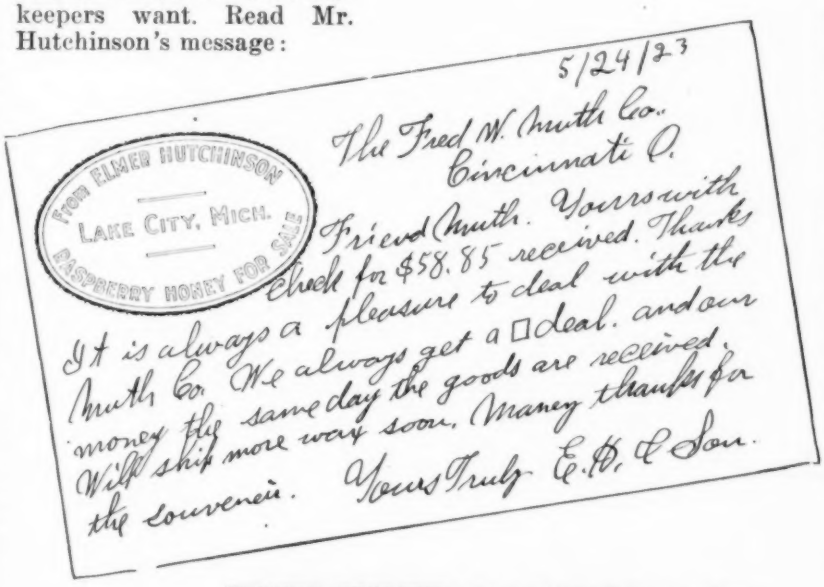
Muth's Cash sans Agent System of Selling means lower cost to you.

Muth's High Quality Sections have *not* gone up in price!

The finest Sections you can buy are being held down to the old prices while the general tendency elsewhere is to ask more. The Muth policy in this instance is in keepiing with the general Muth policy to provide everything for the beekeeper at the lowest possible price consistent with best quality.

For complete supplies and prices see our 1923 Surprise Catalog. Write if you haven't one.

Here's evidence that Muth **business service** is what beekeepers want. Read Mr. Hutchinson's message: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RASPBERRY HONEY FOR SALE
5/24/23
The Fred W. Muth Co.
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Fried Muth. Yours with
check for $58.85 received. Thanks
It is always a pleasure to deal with the
Muth Co. We always get a □deal. and our
money the same day the goods are received.
Will ship more way soon. Maney thanks for
the souvenir. Yours Truly E. H. & Son.

THE FRED W. MUTH CO.

"THE BUSY BEE MEN"

CINCINNATI, O

HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (first half of June).

CALIFORNIA POINTS.—Southern California: Cool, cloudy weather, with high fogs during much of the day, has further diminished prospects for extracting. New reports continue to lessen earlier estimates of the orange crop. The little orange honey secured this season has generally been light amber rather than white in color. Many beekeepers did not extract a pound and are expecting to feed, especially as little late honey is being gathered. Beekeepers in Riverside County predict that many colonies in that county will die out before next season, due to insufficient supplies. Quite a number of shipments of bees reported to Idaho and Utah, in addition to the bees of the regular migratory beemen. Foul brood of both kinds reported worse than usual. A few quotations on 1922 crop honey received as follows: White orange and white sage, 15c per lb. in single 60-lb. cans, 14c per lb. in ton lots, and 12½c on carlot basis. Light amber sage quoted at 12½c in single 60-lb. cans, 11½ in ton lots and 10-11c in carlot quantities. Very few actual sales reported. Beeswax is selling at the wide range of 23-30c per lb. Northern California: Although bees are in good condition and making a living, present prospects are not encouraging for a crop of honey, and some beekeepers have already been feeding. Thistles are said by old beekeepers to be too big and vigorous to yield much honey. Several large beekeepers have already signed contracts for the sale of their thistle honey at 10c per lb.; others are asking more. Numerous inquiries reported for thistle honey. A few sales extracted in single 60-lb. cans reported at 11-13c per lb. Country-run beeswax quoted at 27-28½c per lb. to the beekeeper.

PACIFIC NORTHWEST.—Unsettled weather is making flying difficult for the bees. Crops about 3 weeks late. Weevils working great havoc with first crop alfalfa, but due to constant rain ranchers hesitate to cut it. Bees are light in stores, and some beekeepers are feeding. Spray poisoning has injured many colonies.

INTERMOUNTAIN REGION.—Season cold, rainy and backward. Grasshoppers reported threatening crops in many sections in Montana. Some feeding has been necessary this spring. Slight swarming reported. Several carloads of bees have arrived from California. Comb honey practically cleaned up but considerable last year's extracted honey still on hand in several sections. A firmer tone is reported to the market, however, and prices seem slightly higher. Beekeepers have sold white extracted for nearby delivery at 7½c per lb. in carlots, 8c in ton lots, and 7½-8½c by the single 60-lb. can. Some sales white extracted in 5 and 10-lb. pails reported at 8-12c per lb., and others up to 15-16c per lb. For outside shipment carlot sales white alfalfa reported at 8c per lb., with single cans ranging widely at 8-11c per lb. For light amber a sale price of 9-10c per lb. in ton lots is reported. Beekeepers have been receiving 24-26c per lb. for average yellow beeswax.

ARIZONA POINTS.—Although cool weather has been retarding the honey flow, some mesquite honey of fine flavor and white to water white in color, has been taken off. Prospects good for cotton and alfalfa but rain badly needed in some areas. A few sales of light amber extracted reported at 7c per lb.

TEXAS POINTS.—Rainfall spotted; some sections reporting ample showers, while others comparatively near by state that honey plants are in need of more rain if much surplus is to be stored. Bees are building up satisfactorily. Few sales amber extracted in small pails at 8-9c per lb. reported, with amber chunk quoted at $8.40 for 6/10s and $9.20 for 12/5s. Sales of very light amber reported at 11c per lb. for 60-lb. cans, 13c for 6/10s and 14c per lb. for 12/5s. Beeswax is unchanged at 25c per lb. to the beekeeper.

PLAINS AREA.—Late rains and warm weather have improved the clovers, which are now starting to bloom. Little clover honey has been gathered yet because of the rain. Few sales reported of extracted white clover at 9c per lb. for ton lots in 60-lb. pails, 12-15c per lb. in 10-lb. pails at wholesale, and 16c per lb. in 5-lb. pails at wholesale.

EAST CENTRAL AND NORTH CENTRAL STATES.—Clover is opening nicely, but 10 days late. Crop prospects, although improved by recent rains, do not seem so favorable as last year's. Little activity reported in bee supplies. Bees made good increase in brood on dandelion and fruit bloom, and secured some nectar from them. Some large beekeepers still have stocks of old extracted left, but the small producers are generally well cleaned up on last year's crop. Comb honey is practically exhausted. Few sales amber extracted reported at 8-9c per lb. in ton lots or 12c in 60-lb. cans. No sales white clover reported.

NORTHEASTERN STATES.—Late frosts killed only a little clover, but did retard nectar secretion. Prospects for clover, which is now beginning to bloom, are improved by recent rains. Buckwheat acreage expected to be large. Little swarming reported thus far. Where properly wintered, colonies have built up rapidly. Roadside selling to tourists is becoming important; but few other sales reported, as 1922 crop is largely cleaned up.

SOUTHEASTERN STATES. — Excessive rainfall has hindered the gathering of honey in Georgia, Alabama and Florida. Spring surplus has been lighter than usual. Present indications are for a good flow from "black vine" in Louisiana, from mangrove and cabbage palmetto in Florida and from summer plants in Georgia. Sales reported of white extracted in 60-lb. cans at 12½c, light amber at 8½-10c, and amber 7½c per lb. Few sales reported of fancy comb at $5.00 per case and No. 1 at $4.50.

WEST INDIES.—Porto Rico: Honey flow over the island, especially in the hill section, was about stopped as a result of dry weather. Amber extracted, in 50-gal. barrels, quoted at 6½c per lb. Cuba: Heavy shipments to Holland reported at 80c per gal., including cost and freight.

H. C. TAYLOR,
Chief of Bureau of Markets.

Special Foreign Quotation.

LIVERPOOL.—Since our last report we have had a fairly steady market, and sales have amounted to about 100 tons for the month. The price in American currency remains at about 10 to 11 cents per pound. We have to report a small demand for beeswax. The price in American money is about 29c per pound.

Liverpool, Eng., June 6. Taylor & Co.

The A. I. Root Company's Report.

Since our last report we have made no purchases of either comb or extracted honey. The honey we now have on hand fully covers our immediate requirements.

From Producers' Association.

Last season's comb honey is all cleaned up in inter-mountain territory. We can not find that there is a chance for much increase in comb-honey production. Prices being quoted in U. S. honey reports do not look attractive. Extracted honey situation continues to improve. No doubt prices would have advanced before this if holders would be less anxious to clean up. As far as we know, there is now very little extracted honey in first hands.

The Colorado Honey Producers' Assn.,
Denver, Colo. F. Rauchfuss, Sec'y.

Honey crop conditions in Texas are very uncertain. Early honey flows were a failure excepting in the Rio Grande Valley. There is now very little honey in Texas available for shipment, and not any certainty of a large crop from any section reporting. Mesquite is very backward and may not develop a surplus flow. Conditions are normal in the cotton districts. Demand for honey far exceeds the supply, and prices are ruling rather higher than they have been for the past several months. Texas Honey Producers' Assn.,
San Antonio, Tex. E. G. LeStourgeon.

The Opinions of Honey Producers.

Early in June we sent to actual honey producers the following questions:

1. How does the honey flow thus far compare with normal in your locality? Give answer in per cent.
2. What is your estimate of the 1923 crop as compared with the average for your locality? Give answer in per cent.
3. What prices are producers in your locality expecting to receive for the new crop at their station if sold in large lots, carload or less? (a) For extracted honey per pound? (b) For comb honey, Fancy and No. 1 per case?
4. What prices are expected for new honey when sold in small lots to retailers? (a) Extracted honey in 5-lb. pails or other retail packages in terms of the 5-lb. pail? (b) Comb honey, Fancy and No. 1 per case?
5. What is the retail price to consumers expected for new honey in your locality? (a) Extracted honey in 5-lb. pails or other packages in terms of the 5-lb. pail? (b) Comb honey, Fancy and No. 1 per section?
6. Is there any of last year's crop still in the hands of producers in your locality? If so, what per cent of the crop is carried over?

The answers, as returned by our crops of bee and honey reporters, are as follows:

State.	Reported by:	Honey Flow.	1923 Crop.	In large lots. Ext.	In large lots. Comb.	In small lots. Ext.	In small lots. Comb.	Retail price. Ext.	Retail price. Comb.	Old Crop Uns'd.
Ala.	J. M. Cutts	80	40	$.10		$.75	$4.80	$1.00	$.25	0
Ala.	J. C. Dickman	120	80	.08		.65		.90		0
Ark.	J. Johnson	50	50							0
Ark.	J. V. Ormond	50	50	.13		.90		1.15		0
Cal.	L. L. Andrews	10	10	.13				1.25		0
Cal.	M. C. Richter	100	100	.15				1.50		10
Cal.	M. A. Saylor	100	100	.09	3.00	.65	3.25	.80	.20	0
Col.	J. A. Green	75	75			.65	3.50	.80	.22	25
Col.	B. W. Hopper	100	100	.12½	4.00	.75	4.50	.90	.25	0
Conn.	A. Latham	110				.95	6.25	1.25	.35	7
Fla.	C. C Cook	60	60	.08		.75		.95		5
Fla.	H. Hewitt	110	100	.12		.75		1.00		0
Fla.	F. E. Munson	90	90	.09		.70		.90		0
Ga.	J. J. Wilder	50	50	.12½	4.75					0
Ida.	J. E. Miller		110					.75		5
Ill.	A. C. Baxter	20	30			.80	4.80	1.25	.25	
Ill.	C. F. Bender	20	20							10
Ill.	A. L. Kildow	25	50							5
Ind.	E. S. Miller	100	100			1.00	6.00	1.25	.30	
Ind.	Jay Smith	25	100					1.00	.35	0
Ia.	E. G. Brown		100	.10	4.00	.80	4.50	1.25	.35	5
Ia.	F. Coverdale	90	20	.11½	4.25	.70	5.00	1.00	.30	10
Ia.	W. S. Pangburn		90			.70		.85	.25	30
Kan.	C. H. Mize					.70				20
Kan.	J. A. Nininger	10	80			.85	4.50	.85		0
Ky.	P. C. Ward	75	75			1.15		1.35		
Me.	O. B. Griffin		70							0
Md.	S. G. Crocker, Jr.	90	90							0
Mass.	O. M. Smith	100	100			1.00		1.25	.37	0
Mich.	I. D. Bartlett									0
Mich.	F. Markham	80	50	.11	4.50	.80		1.20	.25	5
Mich.	E. D. Townsend	100		.11						5
Mo.	J. H. Fisbeck	80	100			1.00		1.25		10
Mo.	J. M. Romberger									0
Nev.	E. G. Norton		25	.09						
N. Y.	G. B Howe	50	50							0
N. Y.	F. W. Lesser	100		.13	4.80					0
N. Y.	N. L. Stevens	85	90	.11		.70		.90		0
N. C.	C. S. Baumgarner	110	110			1.00		1.25	.35	0
N. C.	W. J. Martin	100	100	.10	4.50		6.00	1.25	.35	0
Ohio.	F. Leininger	50	50							0
Ohio.	J. F. Moore	80	75	.10	4 25	.80	4.75	1.00	.27	5
Okla.	J. Heueisen	25				1.00	4.80	1.50	.35	2
Okla.	C. F. Stiles	10				.80		1.10	.37	0
Ore.	E. J. Ladd	125	100							10
Ore.	H. A. Scullen	80	80			.80		1.00	.25	0
Pa.	D. C. Gilham	50	40			1.05	7.20	1.35	.45	8
S. C.	A. S. Conradi	60	60			1.00		1 25	.25	0
Tenn.	G. M. Bentley	85	85	.17½	4 50	1.35	4.30	1.35	.37	0
Tenn.	J. M. Buchanan	30	50							0
Tex.	J. N. Mayes	25	30	.11	3.35	.60		.75		0
Tex.	H. B. Parks	25	25	.12	3.80	.90		1.00		0
Vt.	J. E. Crane	75	75					1.25	.35	5
Va.	T. C. Asher	85	95	.16	6.00	1 15	6.00	1.25	.35	0
Va.	L. N. Gravely	25	37	.13	4.80		4 80	.75	.25	
Wash.	W. L. Cox	80	100							15
Wash.	G. W. B. Saxton	110	75	.11	4 00	.65	5.00	.75	.25	2
W. Va.	T. K. Massie							.85	.40	0
Wis.	F Hassinger, Jr.	100	70	.12		.80		1.00		2
Wyo.	A. D. Brown					.65	3.25	.90	.20	0

XUM

I saved 10% on container costs by ordering of you last year. That's why I know I will get the best possible prices from you this year.

J. G. Prosser,
Fort Dodge, Iowa.
June 6, 1923

ARE YOU buying containers right?

DO YOU KNOW that we saved hundreds of producers one-half the cost on our NEW ALL PINE HONEY SHIPPING CASE?

LET US quote you on your requirements.

THE A. I. ROOT CO. OF IOWA
COUNCIL BLUFFS, IOWA

WOODMANS FAMOUS BEE-WARE

The Smoker

You Ought to Own

THE most important invention in bee-keeping, as little can be accomplished without the Bee-Smoker.

The **new Bingham Bee-Smoker is the most** efficient and durable machine on the market. The standard for over 40 years in this and many foreign countries, and is the all-important tool of the most extensive honey producers of the world.

Comes with metal legs, metal binding and turned edges. The four larger sizes have hinged covers. The fire grate is of very substantial material, with an abundance of draft holes, the 4-inch size having 381 holes, equal to an opening of 2-inch square.

A valve in the bellows of the larger sizes makes the Smoker respond to the most delicate touch.

The new Bingham comes in six sizes, including the Big Smoke, which is furnished both with and without shield. The larger sizes are best, as they hold more fuel, give more smoke, require filling less often, and are especially recommended to those who work with their bees several hours at a time.

Write for our complete catalog of bee supplies and accessories. Special circular of all sizes of Bingham Smokers free for the asking.

A. G. WOODMAN CO.

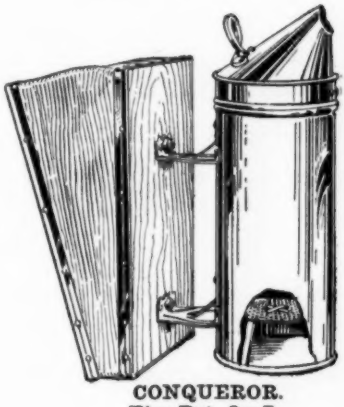
238 Scribner Ave., N. W.

GRAND RAPIDS, MICH, U. S. A.

NEW BINGHAM BEE SMOKER

PATENTED

BIG SMOKE—With Shield Fire Pot, 4 x 10.



CONQUEROR. Fire Pot, 3 x 7.

LITTLE WONDER. Fire Pot. 3 x 5½.

Benninghof Farm Italian Queens

(1) Production. (2) Gentleness (3) Color

AFTER thirty years of the successful production of honey and twenty years of the raising of the majority of our own queens, we are for the first time placing a limited number of queens of our own raising on the market. We have always kept a record of our best producers and from these we always bred. In checking up our records five years ago we noticed one strain in particular among our 900 colonies that not only that year but for the two years previous was **far superior to the others in the production of honey**.

We selected thirty of these colonies and moved them into a yard by themselves, and after another year of trial we selected five of the very best of these from which we started to breed, first moving all others out so as to insure that all the queens would mate only with the drones of these selected colonies.

The result was, after placing the daughters of these queens in colonies alongside others of the same strength and under the same conditions, their yield was from twenty-five to forty per cent more. In 1922 we used 1000 of these queens in our 1200 colonies as a further test, and they far outstripped the other 200 which we had bought and had bred from the best queens we could obtain on the market. We now feel safe in saying that we now have a strain of Italian bees whose queens are superior to any that may be purchased on the market.

The number of surplus queens we will raise and offer for sale will be limited, and all purchased from us will be equal to those we use ourselves, as we are not in the business of raising queens but are commercial honey producers.

The Benninghof Farm method of the producing and extracting of honey, together with queen-rearing, will be shown at the OHIO STATE FAIR, August 27-September 1.

Prices for balance of the season: Untested—One, $1.50; six, $8.50; twelve, $16.00. Tested—One, $2.50; six, $14.00; twelve, $27.00. Fall Requeening—25, $30.00; 50, $57.50; 100, $110.00. Breeders on application.

BENNINGHOF FARM, Station F, Columbus, Ohio

Ohio's Largest Commercial Honey Producers.

QUEENS! QUEENS! QUEENS!

ROOT STOCK

Over 1000 colonies operated for production of summer and fall queens. No disease in our apiaries. Pure mating, safe delivery and satisfaction guaranteed. Summer prices: $65.00 per hundred; $9.00 per dozen; $1.00 each. Tested queens, $1.50 each.

Will also book limited number of orders for 3-frame nuclei, with extra pound of bees for June and July delivery.

3-frame Nuclei of Italian Bees, with queen.....$5.00 each
3-frame Nuclei of hybrids, with Italian queen..... 4.50 each

"The nuclei arrived in fine condition.—H. M. Daniels, Caribou, Maine."

"I am much pleased with your stock and I have recommended your bees to a number of beekeepers.—Otto W. Gall, Inspector of Apiaries, Binghamton, N. Y."

"Cassville, Wis. I like your queens very much and am using them for queen-rearing. They seem very prolific, keeping cells filled to the top-bar. I have two batches of cells under construction and expect to rear some from each queen, so that if any of the queens should die before next season I will still have some of her strain in my yards.—Mathilde Candler."

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D313000—Select Unt..	2.00 ea.	1.90 ea.	1.80 ea.	1.70 ea.	1.60 ea.
D314000—Tested	2.50 ea.	2.35 ea.	2.25 ea.	2.10 ea.	2.00 ea.
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Add price of queen wanted to package price given above. Large quantity lots quoted on application. These prices are F. O. B. shipping point.

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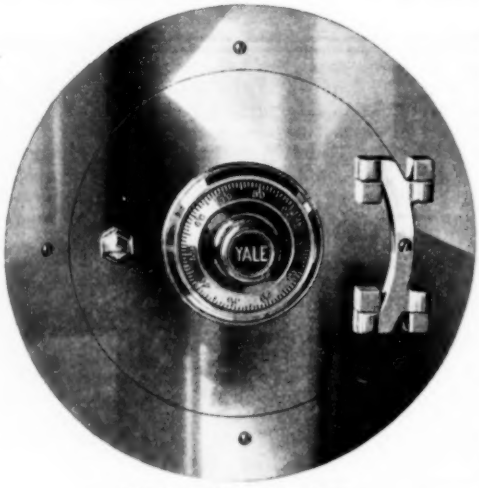

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To the Beekeepers of New York State

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Its use insures greater ease of assembly, more efficient brood-combs, and iron-clad extracting combs.

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Dadant's Wired Foundation and slotted bottom-bar frames are sold by all distributors of Lewis "Beeware" and Dadant's Foundation. Send them your orders.

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BEESWAX—We need constantly large quantities of beeswax and pay good prices for it. We cannot use mixtures containing other waxes, as it spoils the purity of our product. Ship pure beeswax to us at Hamilton, Ill., or Keokuk, Ia., or drop us a card and we will quote f. o. b. here or your station, as you wish.

Gleanings in Bee Culture

JULY, 1923

EDITORIAL

ANOTHER beekeeping authority has passed away. Arthur C. Miller died at his home on June 11, from an attack of heart trouble in his 61st year. Mr. Miller was recognized as one of the leading authorities on beekeeping in this country, having been a writer to the bee journals in former years. He has been connected with the Providence Institution for Savings for 42 years; but, during the past few years, he has been increasing his outapiaries and was looking forward to resigning his position in the bank and devoting his entire time to honey production. He was keenly interested in every phase of beekeeping, and particularly so in a study of bee behavior. He devised an observation hive so designed that it was possible for him to watch the development of the bees from the egg and see every step in the process of feeding the larvae as well as the other activities within the hive not often seen when the hive is disturbed by being opened. The science of beekeeping made a strong appeal to him. He was deeply interested in the success of the Miller Memorial Library, having donated his entire library on beekeeping to this memorial library.

Death of Arthur C. Miller.

USUALLY a fair estimate of the honey crop can be made by the first of July, but this year not enough is known concerning the crop in the northern states to give figures that mean much. California, especially southern California, and Texas report short crops. Several others of the southern states apparently will have a short crop this season on account of excessive rain during the honey flow. At the time this is being written (June 21), there is a good honey flow from white clover and alsike clover in the clover regions. The weather has been favorable for nectar secretion from clover for a week, and the bees are making splendid progress. Much will depend upon weather conditions during the next 10 days in this region. In the sweet clover and alfalfa regions of the Missouri River Valley and the inter-mountain region it is too early to tell anything about what the crop will be, but prospects are excellent throughout much of this section. Reports indicate a good honey flow from clover in Ontario.

Honey Crop Conditions.

PROBABLY the greatest meeting of beekeepers ever assembled in this country will be the Chautauqua at Madison, Wis., Aug. 13 to 18, to which beekeepers from everywhere are invited. This program is published on page 480 of this journal.

The Miller Memorial Library will be dedicated during this meeting, and on Saturday, Aug. 18, a pilgrimage will be made to Marengo, Ill., where a tablet is to be placed in the church in which Dr. Miller conducted a Sunday-school class for many years.

Miller Memorial Library Dedication.

THE Editor made a preliminary visit to his apiaries in Indiana during the week beginning June 4, this being the first attention the bees have had since the honey crop was taken off last summer, except that of packing them last October and unpacking them just prior to this visit.

During this visit the queens were found and clipped, the hives were reduced from two stories to one and comb-honey supers were prepared and put on. Since only four or five weeks can be devoted to these apiaries during the year many things have to be done in a somewhat slipshod manner, and the Editor would not take any pride in showing the readers of Gleanings in Bee Culture his apiaries. In fact, he is often embarrassed by visitors who can not help but note that these are by no means model apiaries, so far as appearance is concerned.

Among other things that can not be

Requeening Without Killing the Queen.

XUM

done as they should is requeening. For several years most of the requeening which has been done in these apiaries was accomplished by establishing a nucleus in a food chamber after it was nearly filled with honey, this being done during the honey flow. The apiaries are worked for comb honey on the two-story plan, the hives being reduced to one story when the comb-honey supers are put in place. When the upper stories are well filled at the beginning of the honey flow, they are simply set on an extra bottom-board located close beside the original colony and given a ripe queen-cell at the time the comb-honey supers are put in place. If they are not quite filled they are tiered up on other colonies to be filled, then later they are distributed and each given a ripe queen-cell. At the close of the honey flow when the comb-honey supers are removed, a newspaper is spread over the brood-chamber, and the food chamber, now a nucleus, but nearly filled with honey, is set on top. The old queen is not killed because of lack of time, but during the past four or five years about 70 per cent of the colonies treated in this way have young queens the next spring, this being known by the old queens being clipped. Of course, in some of these cases the young queen may have been killed and the old queen later superseded since there was no way of determining this. However, to requeen about 70 per cent of the colonies with no more effort than this has seemed to be well worth while.

Nearly every colony treated in this way last July had a young queen this spring. In fact, in clipping the queens only one old queen was found where a nucleus in a food chamber had been united with the original colony. Now, if some one can tell us just why the young queen is sometimes killed when a colony having an old queen and a young queen are united in this way, he will confer a great favor upon the beekeeping industry, for whole apiaries could then be requeened with but little labor since it would not be necessary to find and kill the old queen. In many of the colonies referred to above the old queen was reared in the spring of 1922 by supersedure, only to be superseded by the queen of the nucleus in the food chamber in July when the uniting was done. The Editor would hesitate to recommend such an apparently careless method of requeening; but the splendid showing of last season suggests that some genius may discover a way of duplicating this, season after season, and the present prices of honey will compel beekeepers to take every short cut possible to lower the cost of production.

Food Chamber Not Always Filled in the Spring.

THE Editor was greatly disappointed to find that the bees in his apiaries had not refilled their food chambers this spring as usual from early nectar sources. The long cold spring had compelled them to use nearly all the honey in the food chambers, and the cold weather during fruit and dandelion bloom prevented them from refilling the food chambers before clover bloom.

This is the second time since 1911 when the food chamber system was inaugurated that the bees in these apiaries have failed to refill the food chambers with early honey before the main honey flow from white clover and alsike clover. The disappointment in not finding these food chambers fairly well filled with honey ready to be topped off with a little clover honey when the brood emerges from the lower part of the combs in the middle of the food chamber is somewhat alleviated by noting what had happened to colonies that were not supplied with a food chamber containing 40 or 50 pounds of honey.

Even if the bees do fail to refill these food chambers before the main honey flow one year out of five or six, the presence of so much honey during the one adverse spring saves the colonies when the beekeeper is not on the job with the feeders. If an upper story of honey had not been given these colonies last summer, they would have been ruined for honey production for this season by the curtailment of brood-rearing in May. Although broodrearing was reduced in some colonies they were, as a rule, in good condition for the clover honey flow the first week in June.

The presence of a superabundance of honey from the previous July up until the beginning of the clover honey flow usually results in the colonies being so much stronger in the spring that they are able to refill the food chambers before the main honey flow. Thus, in one sense, these automatic feeders are refilled free of charge after the first time during most seasons, for strong colonies are able to refill their feeders during the spring when weaker colonies are not getting enough for a living. If they are refilled free of charge four seasons out of five or five seasons out of six, they are certainly wonderful feeders, especially since they save the situation during the one season out of five or six when they are not refilled, by permitting the bees to keep up brood-rearing just previous to the honey flow.

Of course, similar results can be secured by feeding in July and August if needed to induce brood-rearing to pro-

vide winter bees, giving a great abundance of winter stores in the fall, then again feeding in the spring, but too many fail to do this feeding in time especially in the spring. The food chamber is, therefore, a sort of insurance that pays well. Besides, why should any one want to take away honey under present market conditions and buy expensive sugar to supply the needs of the bees?

Where the Food Chamber is Advantageous.

SINCE this is the time many beekeepers must decide whether they will leave an upper story filled with honey or nearly so for the bees or whether they will extract all of the honey down to the brood-chamber, it may be well to point out under what conditions the food chamber is especially advantageous. There are locations where the food-chamber plan makes all the difference between success and failure unless a lot of tedious feeding is done, and there are other locations where the food chamber is not often needed.

In northern localities where the natural stores are such that it is not safe to risk wintering on honey, it is no doubt better to have the sugar syrup stored in the brood-chamber than to have it stored in a food chamber. The colonies can then be wintered in a single hive body, which is an advantage. Beekeepers in the far north who practice feeding heavily in the fall, in order to have winter stores of the best quality, certainly do not need the food chamber for winter.

This does not, however, solve the problem of stores completely even for the northern beekeeper who is compelled to feed sugar syrup to insure good wintering, for it does not supply the great reserve stores so vital to the greatest prosperity of the colony during the spring brood-rearing period when the workers for the harvest are reared nor during the late summer and fall brood-rearing period when the workers are reared that form the winter cluster, thus often making it necessary to feed the bees during one or both of these important brood-rearing periods. Further south where the additional room in the winter makes but little if any difference in the way the bees come through the winter, the food chamber affords a happy solution of the problem of supplying the colony with an abundance of stores throughout the year without the trouble of feeding, and several beekeepers in the far north are now able to winter well when the food chamber is used in spite of the larger winter chamber.

Even with the largest of large hives if extracted honey is being produced, there is but little honey left in the brood-chamber when the supers are removed after the early honey flow. In localities not having a fall honey flow, to take off and extract all of the honey in the supers at the close of the honey flow would, in some cases, result in the colonies being greatly injured by running short of stores during late summer and going into winter quarters with mostly old bees. By leaving the food chamber on the hive during the early honey flow, tiered up among the supers above the queen-excluder, all of the supers can be taken off and the honey extracted at the end of the season, for the colony will be well provisioned with stores when the food chamber is dropped down in place on top of the brood-chamber. This supply of stores tides the colony over the late summer and autumn brood-rearing period without being on starvation rations, and if the cells vacated by the emerging brood in the food chamber were filled with honey during the early honey flow the colonies are thus supplied with stores of good quality for winter. In the spring the large supply of honey in the food chamber makes spring feeding unnecessary, as a rule.

In comb-honey production the food chamber is of no special advantage for late summer since colonies used for comb honey usually have a fair supply of honey in the brood-chamber to tide them over until time to supply their winter stores. Likewise in regions where a fall honey flow can be depended upon to follow closely the early honey flow, there would be no advantage in having the food chamber on the hive during the late summer and autumn. During the winter it is better in cold climates to have the winter chamber as small as consistent with the strength of the colony. So the presence of the food chamber during winter is not an advantage provided there is an abundance of good stores in the brood-chamber proper. During the spring, however, the food chamber is of tremendous value in stimulating brood-rearing and rendering feeding unnecessary.

The food chamber will be found of especial value where bees are wintered on natural stores and where the winters are not too severe. In such localities it simplifies the management throughout the year, for when properly handled the beekeepers need not give the question of the food supply for the bees a thought. In regions where honey granulates solid in the combs, the food chamber will not find favor since combs of honey granulated solid in the spring are a nuisance.

XUM

RATE OF EGG-LAYING*

Some Startling Inside History of the Bee Colony Revealed by Science

By Dr. J. H. Merrill

PROBABLY most beekeepers have wondered just what takes place inside of a beehive during the active season of the year. They may have been curious to know how many new bees emerged daily, how many disappeared daily, and how many it took to gather a crop of honey. Not only these questions but several others would naturally suggest themselves to the curious-minded beekeeper. Observations made on six colonies of bees at the Kansas Experiment Station throw light on these questions for Kansas conditions. There are very good reasons for believing that these conditions might not entirely hold true for a more northern latitude; that is, they might not hold in the number of bees found in a hive at the beginning of the honey flow, because brood-rearing before the honey flow is probably more intense in the north. However, the general trend of these data should apply to any locality.

In this experiment the number of bees, the amount of brood, and the honey stored in each hive were determined at three different dates during the summer—June 15, July 15 and Sept. 27. A study of the data secured at these different periods reveals some very interesting results.

Queens Averaged Only from 857 to 1321 Eggs per Day.

Some of these results are summarized in Table I.

TABLE I.

Hive.	Av. daily egg laying prior to June 15.	Bees that should have been in the hive July 15.	No. of bees that were in the hive, July 15.	Bees that died between June 15 and July 15.	Av. daily death rate.	Excess of death rate over birth rate.
1	1241	60984	11874	49109	1637	396
2	982	65088	25250	39838	1328	346
3	1238	79642	29575	50067	1668	430
4	1101	58034	26250	31784	1059	42*
5	1321	79639	34325	45314	1511	191
6	857	43293	14325	28868	962	105

*Excess of birth over death rate.

The amount of brood in each hive on June 15 had, of course, all hatched from eggs which had been deposited during the 21 days previous to this date. Consequently, when the amount of brood in each hive was divided by 21, it indicated the average daily rate of egg-laying for the three weeks weeks previous to June 15. It may be seen by examining column 1 in the above table that the average rate of egg-laying ranged from 857 in colony No. 6 up to 1,321 in colony No. 5. These colonies were all headed by good queens introduced into the hives during the preceding August, and, as the three weeks prior to June 15 were just preceding the honey flow, each queen should have laid at her best.

Death Rate Exceeds Birth Rate During Honey Flow.

Between June 15 and July 15 there are 30 days, but only the eggs which were deposited during the first 9 days of this period would develop into adult bees by July 15. It seemed a fairly safe assumption that the rate of egg-laying would not vary markedly during these 9 days; therefore, in order to estimate the number of bees which might possibly be in the hive on July 15, the amount of brood on June 15 was added to the number of bees in the hive on that date and this was then added to the number obtained by multiplying the daily rate of egg-laying by 9, since only from those eggs deposited during these 9 days would adults emerge before July 15. Column 2 in Table I shows that the number of bees that might possibly have been in the hive on July 15 ranged from 43,293 in hive No. 6 up to 79,642 in colony No. 3. Column 3 shows the actual number of bees that were in the hive on July 15. Column 4 shows the difference between these two amounts, or the number of bees that died during that thirty-day period. This amount varies from 28,868 in colony No. 6 up to 50,067 in colony No. 3, and, when these amounts were divided by 30, it was found that the average daily death rate ranged from 962 up to 1,668. The average daily death rate in five of the six colonies exceeded the average daily egg-laying, or what might be termed the birth rate, by from 105 to 430. Colony No. 4 was an exception to this rule, as the daily birth rate exceeded the daily death rate by 42.

This should convince anyone of the absolute necessity of having strong colonies before the honey flow commences. As the daily death rate exceeds the daily birth rate in a colony of bees, the colony will not increase in strength, but will decrease as long as its bees are wearing themselves out gathering nectar. Colony

*Contribution No. 88 from the Entomological Laboratory, Kansas State Agricultural College. This paper embodies some of the results obtained in the prosecution of Project No. 126 of the Agricultural Experiment Station.

No. 3 had 42,500 bees at the beginning of the honey flow and was to all outward appearances an exceptionally strong colony. It was housed in a 4-story hive during the height of the honey flow and gathered over 100 pounds of honey. As the death rate exceeded the daily birth rate in this colony by 430, it probably never exceeded 42,500 bees at any time during the 30 days.

Honey Produced by Different Colonies Not in Proportion to Number of Bees.

Table II is concerned chiefly with the activities of the colony between July 15 and July 26.

TABLE II.

Hive.	Honey stored, June 15 to July 15.	Honey stored, June 15 to July 26.	Bees that produced a crop up to July 26.
1	62½	74½	53538
2	29⅛	45¾	59292
3	85⅜	104⅞	72214
4	55⅜	63⅜	51428
5	79	86½	71713
6	24⅞	27⅞	38151

The amount of honey that each colony stored between June 15 and July 15 will be found in column 1 in the above table, and it will be seen that there is no correlation between the number of bees that died and the amount of honey stored.

The honey flow ended July 26, but as daily weights were taken of each of the colonies, it was possible to ascertain just how much honey was stored between July 15 and July 26. This amount, when added to the amount of honey in the hive on July 15, indicates the total amount in the hive on July 26, or at the close of the honey flow. Column 2 shows the amount of honey stored between June 15 and July 26.

As only those bees which emerged from eggs laid 35 days prior to July 26 could have taken part in gathering that season's crop of honey, the number of adult bees in each hive on June 15 was added to the amount of brood plus six times the daily rate of egg-laying in each hive which represented the total number of bees that had been in the hive as adults 35 days before July 26, or from eggs deposited at the latest 6 days after June 15.

The total number of bees which were actually engaged in gathering nectar up to July 26 will be found in column 3 of Table II. It will be noticed that in colony No. 6, 38,151 bees stored 27⅞ pounds of honey, while in colony No. 3, 72,214 bees, which was less than twice as many as in colony No. 6, stored 104⅞ pounds, or nearly four times as much honey. It will naturally be conceded that a large number of bees will store more honey than a less number, yet a comparison of columns 2 and 3 show that no correlation exists between the number of bees that gathered a crop and the amount of honey they stored. There is a correlation, however, between the size of the honey stomach and the amount of honey stored, but this subject has been treated elsewhere (Jour. Econ. Ent., Vol. 15, 1922, pp. 125-132). Although in colony No. 3, 72,214 bees were engaged at one time or another in gathering the honey crop up to July 26, yet this colony at no one time had more than 42,500 bees, as has been previously explained.

The necessity of having the colonies strong before the honey flow has been shown. Additional evidence will be found by referring to Table III.

The Useless Consumers.

TABLE III.

Hive.	Av. daily egg-laying 21 days prior to July 15.	Honey consumed between July 26 and Sept. 27.	Av. daily egg-laying 21 da. prior to Sept. 27.
1	720	37½	48
2	1202	48⅜	0
3	459	22¾	306
4	603	20⅝	112
5	1115	31	87
6	375	4⅜	135

The average daily rate of egg-laying for 21 days prior to July 15 will be found in column 1 of Table III. None of the bees which emerged from this brood could possibly have taken part in the gathering of the honey crop during that season. Column No. 2 gives the amount of honey consumed in each hive between July 26 and Sept. 27. Those colonies having the largest amount of brood on July 15, which might aptly be called boarders since they were never producers, consumed the greatest amount of honey. Colony No. 2 produced only 45¾ pounds of honey between June 15 and July 26. Between July 26 and Sept. 27 it consumed all of this and nearly three pounds more which was given to it. Had this colony been destroyed on July 26 and the honey sold at 20c a pound, it would have netted $9.00. Instead of that, if we consider honey as being worth 20 cents a pound, it cost $9.60 to keep the colony alive until Sept. 27, at which time it was given $8.00 worth more to keep it alive over winter so it could go through another successful year. Colonies 5 and 1 were not quite such expensive luxuries, because they really produced the honey which they consumed between July 26 and Sept. 27. However, colony No. 5 ate $6.20 worth of honey, while No. 1 ate $7.50 worth of honey during this time. These results are startlingly significant and suggest that some change in method of management is needed to avoid this tremendous loss. Colony No. 6 was very modest in the amount of brood which it had on July 15, and even more so in the amount of honey which it consumed (4⅜ pounds) after the honey flow ended.

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Column 3 shows the average daily rate of egg-laying for 21 days prior to Sept. 27. It will be seen that brood-rearing had either ceased or practically ceased during that period, yet each colony reared a sufficient amount of brood to enter the winter in a fairly strong condition.

Summary.

Summing up the points briefly which have been mentioned, it will be seen: First, that the daily rate of egg-laying just prior to the honey flow under Kansas conditions is lower than is generally thought to be true. Second, that the number of bees which died exceeds the number which emerge each day. Consequently, a colony of bees does not at any time during the honey flow exceed the strength which it had on the day when the honey flow began. Third, it will be seen that a large number of bees is desirable, yet the amount of honey stored was not directly correlated with the amount of bees in the hive. Fourth, it was shown that those colonies which possessed the largest amount of brood at the end of the honey flow consumed the greatest amount of honey during the summer season. Fifth, it was shown that the daily rate of egg-laying greatly diminished late in the season, but not to such an extent as to imperil the strength of the colonies.

Manhattan, Kansas.

HARVESTING THE HONEY CROP

A Simple yet Practical Extracting Outfit and Some Short Cuts in Extracting

By E. D. Townsend

I HAVE mentioned in a previous article that we have a 12 by 16 honey-house at each yard and that we move our power-extracting outfit from yard to yard to do the extracting. I have also previously mentioned that some of our locations produce honey earlier than others, and those early yards wind up the season somewhat earlier than other yards. We aim to begin extracting at those early yards, for the honey there is in better condition to take off, being better cured than in the other yards.

In addition to the extractor, engine and honey-pump, our extracting outfit consists of a Townsend uncapping-tank and two round honey-tanks. The doors of our honey-houses are 32 inches wide to admit the four-frame extractor. The front of the honey-houses is near the center of the beeyard for convenience. To the right, near the door, we set the engine, then the extractor, then the uncapping-tank. The gate in the uncapping-tank is in the end opposite the extractor, the tank being raised high enough to set a pail or tub under, to draw off what honey drips from the cappings.

Both the extractor and the engine are set on a framework built of two eight-inch planks two inches thick with pieces of the same material spiked across each end, making a solid platform when fastened to the floor of the honey-house. The honey-pump is bolted to a 2 by 8 plank, four feet long, and by moving either end is easily lined up with the engine. There is a four-inch pulley on the engine, and, by using a two-inch belt on both the extractor and the pump, they can be belted directly from the engine pulley. By belting the pump directly to the engine instead of to the extractor, the pump runs when the extractor is standing still. With a three-fourths-inch pump, this is necessary to keep the honey out of the way on rather cool days when the honey is heavy and does not pump well. If I were buying again I would buy a one-inch pump, and belt it to the extractor, for there is a good reason for not running the pump empty.

With so small an extracting house one can not have his honey-tanks on the same side of the house as the extracting outfit, so the honey is elevated overhead and carried to the opposite side of the house where it empties into the tank. One-inch gas-pipe is used for this purpose.

The Honey-Tank and Strainer.

Two round honey-tanks are used to handle the honey from the extractor. The only reason for having two is that sometimes when the weather is bad, we have some trouble in getting the honey to run through the strainers. It is then that we shift the honey to the other tank; otherwise, we put it up in 60-lb. cans about as fast as it is extracted. Those round tanks for handling the honey are 22 inches in diameter and 32 inches high, of galvanized sheet steel, with an inch and a half Perfection honey-gate near the bottom, which is about the right size for filling 60-lb. cans having a one and three-quarters inch cap. The tanks are elevated so a 60-lb. can on scales will just go under the gate.

The Strainer.

For the honey strainer we use two yards of cheesecloth, folded it double and

sewed up two sides, thus forming a bag. A selvaged edge is left at the open end of the bag. Make a frame out of one-inch lumber, on the picture-frame style, 23 by 23 inches, outside measurements. Four-inch wide lumber is about right for this size of strainer frame. It should be constructed in such a form that it is smooth on both top and bottom. To use, slip the strainer into the frame bag and place it on the tank, folding the open end of the strainer under, between the strainer frame and the tank. The weight of the honey in the strainer will keep it in place. This strainer, if properly made, will keep every bee or fly out of the honey-tank while in use, since it is a double strainer and does its work well. To wash, separate the frame from the strainer. The strainer can be washed, wrung almost dry and used without further drying.

The Townsend Uncapping Tank.

To hold the cappings and handle them well from a 75-colony yard, buy a six-foot-long galvanized steel stock tank. It should be two feet wide and two feet deep, with a gate in one end. This gate is not used much, and we have a piece of threaded gas-pipe soldered on in place of a gate, which is stopped with a cap that can be had at almost any hardware store. A slatted raised bottom is made of wood for the drainage of the cappings. Cut two pieces of inch lumber the inside length of the tank and two and a half inches wide. These two longitudinal pieces are the frame for the inch-square strips to be nailed to, forming the bottom or drainage for the cappings. The inch-square-drainage strips are made the right length to go easily in crosswise on the tank and are nailed to the longitudinal pieces, leaving a one-fourth-inch space between each one for the honey to percolate through. A frame is made for the top of the tank out of inch material. This frame should be made about two inches longer than the tank, so it will rest on the top and not fall in. Two cross-pieces are nailed on, one near each end, so near the end that there will be no end play to let the frame work endwise and fall into the tank. The two cross-pieces are nailed on the underside of the main frame, telescoping into the tank and keeping the frame from moving sidewise. The inside width of the frame is the same as the length of the hive, eighteen and a quarter inches, so combs can be set in when extracting.

The Tools Used.

No one at our house ever thinks of buying other than a four-inch smoker. There is a diversity of opinion whether the regular smoker is better or the extra-tall one, with the majority in favor of the regular size. In my experience I have never seen a hive-tool to compare with the regular one now on the market. A smoker and a hive-tool are in constant use among the bees, and it is folly to try and economize on either tool to save a little expense. Veils are usually used, but no gloves are ever seen in our yards, as far as I can recollect. Although many of the near-by supers of honey are carried directly to the honey-house to be extracted, a good wheelbarrow is always ready and is almost constantly in use.

Extracting.

The utensils for extracting make a full load for the Ford truck. All hands help in getting the outfit in place in the extracting house. When this is done, one finishes setting up the outfit, while another lights the smoker and brings in honey to begin operation. Before beginning to extract, all hives and upper stories are numbered; that is, if the hive should be number 24, all supers on that hive will be marked the same—24. This has already been explained in the June issue.

In taking off honey to extract, no escape-boards are used. I presume that some of my readers will take exceptions when I say that escapes are altogether too slow; but you will understand better what I mean when it is known that, with our method of freeing supers from bees and getting the honey in ready to extract, it does not take one person more than one-fourth his time during the extracting period. Were we to use escape-boards, it would necessitate an extra trip to the yard the day before we do our extracting, except that part of each yard not finished the first day. At any rate, were you to work with the boys a day as I will now try to tell you, I think you will be convinced that, with us at least, there is no use for an escape-board in the production of extracted honey.

In bringing in honey to extract, we usually go to the further row from the honey-house and work toward the house. Place on the wheelbarrow an empty hive body, a robber cloth, a smoker in prime condition and the hive-tool. If the food chamber is still on top of the hive next to the cover, remove it, together with the cover, all at one operation, blowing in a little smoke when prying it loose. If you have not had much experience in the handling of bees, blow a little smoke in the entrance at the same time. It is not always necessary to smoke the bees at the entrance, but sometimes it is quite essential. The food chamber can be set on the empty hive body until returned to the hive later. Give the bees in the super to be removed more smoke and at the

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same time pry the upper story loose. You will notice that this prying the super loose is for the purpose of loosening all the combs that may be built to the lower story. This is much quicker than to loosen each individual comb separately. If you have puffed in considerable smoke, the bees will be nearly all out of the story you want next.

Remove a comb, bees and all, and set it up against the side of the hive. The bees are left on this comb to protect it from robbers while you are handling the other seven combs still in the super, for we use only eight combs in our ten-frame extracting-supers. While you have been smoking the bees down out of the super, you should loosen the frames at the rabbet. Begin at one side of the super where you have removed the comb and sweep off the side of the hive and the outside of the next comb; then slide the comb just swept to the side of the hive; now sweep the bees from the other side of the comb and from the side of the next comb; now slide the next comb over next to the comb you now have free from bees and sweep as before, continuing across the super. Work rather lively and you will get the super off the hive before any bees return.

Thus far it will be noted that the super has been worked on the hive, and that no robbers have had access to the honey during the work. Set the super on the wheelbarrow and shake off the bees from the comb you set beside the hive at the commencement. Now put on a robber cloth, and, if you have gotten the idea and freed the combs from bees by lifting but one comb out of the super, no robbers will bother. There is no other way that a super can be freed from bees in so short a time with so little labor.

In removing the last super from a hive, the food chamber is put next to the excluder, and then the super set on top when you proceed to smoke and brush the bees out as before. If a colony has no food chamber it will be necessary to provide an empty super to place next to the excluder, to hold the bees that are swept from the combs. Two or three supers, according to how full of honey they are, will make a wheelbarrow load.

To Uncap Honey.

Two Bingham knives should be provided and kept handy for uncapping the honey—one, a long ten-inch knife, the other a short, light knife. The long knife is better for well-capped combs, while the short, light knife is handier for those not so well capped.

To uncap, start the knife at the bottom of the comb to be uncapped and, with a drawing motion, cut the entire cappings off the side of the comb at one operation. As you get well started up, lean the comb toward the knife so that the cappings, as they leave the knife, will not fall back on the uncapped surface. I have seen uncapping done when this last precaution was not observed, the capping being allowed to fall back on the uncapped surface, making it necessary to use more time in getting the loose cappings from the comb than it took to uncap in the first place.

A pleasant place to work. Note the portable honey-house where the extracting is done is located in a shady place, while the bees are in an open space beyond. One of E. D. Townsend's apiaries.

The one who does the uncapping does the sorting of the combs as to weight for extracting. It is known that two combs, one twice as heavy as the other, do not extract well, if put into the extractor in opposite baskets; but if two heavy combs are opposite and the other two baskets contain two light combs, the extractor will balance.

It is evident that, when all the combs in a super are full of honey, no sorting as to weight will be necessary. At the close of the season it is impossible to get

the last super as full in all cases as we would like, so we work the partly filled supers about as follows: If the super is filled in a normal way, that is, the heavy combs in the center of the super and those nearer the side of the super being only partly filled, the one next to one side of the super is uncapped first, then the second one; then we go to the other side of the super and take the first, and then the second comb. In this way we usually get combs that match as to weight. By using eight combs in our ten-frame supers it takes two runs to each upper story with our four-frame extractor. We have a system of returning the combs to the same super they were in on the hive, for we have disease among our bees and do not want to spread it more than we can help by interchanging combs.

Honey does not improve by being left in open tanks, so we aim to can up each day's extracting, and it is taken home each night. We think we know that this system of canning honey at once after extracting is the best yet.

North Star, Mich.

THE BOTANY OF BEEKEEPING

Great Pleasure as well as Profit from a Study of Nectar-bearing Plants

By Josephine Morse

ALL commercial honey producers know how honey varies in color, flavor and quality, and it undoubtedly behooves us all to increase our general knowledge on this subject. How can we get the maximum honey crop (which surely all beekeepers desire), no matter whether it is a question of bread and butter to them or just a question of "brag," unless we know what flowers are going to furnish the nectar, and when they bloom? When we know these things, we are in a position to get our bees into prime condition for gathering us a surplus. This knowledge will necessitate close observation, throughout the season, not only of the period of blooming of nectar-producing flowers but of the amount of such flora in the vicinity of our hives and the activities of the bees in the supers.

Sometimes, though bees are working certain flowers well, they may not be storing much above the brood-chamber. The reasons for this situation vary and offer a chance for further study and observation. Let us say that, to the beekeeper's great annoyance, the bees, on a beautiful summer day, utterly neglect the blossoms in a grove of linden trees in full bloom. The reason for this may be that, owing to atmospheric conditions, practically no nectar is being secreted by these blossoms; or perhaps the wind is strong and cool, or in a direction to carry the scent right away from the hives; or there is something else in bloom that they like better. Sometimes the configuration of the land figures in the "reason why."

Bees, in their flights, follow the valleys to a great extent. Whether the hills cut off the scent or the bees just don't like to climb, I don't know; but it seems to be a fact that there has to be something pretty enticing on the other side to make bees take their line of flight over a long, high hill, especially if there is anything which can be browsed upon with greater ease near by.

The "Marriage Priests" of the Flowers.

Even if you are nothing of a botanist, you are bound to pick up many interesting things in connection with flowers, such as the very wonderful way in which fertilization is arranged and the important role our bees so often and so unconsciously play in the drama. Whether their visits are paid for the purpose of gathering pollen or nectar, pollen is sure to be carried from blossom to blossom, and the reproduction of the plants stimulated thereby. J. E. Crane of Middlebury, Vermont, with truth as well as poetry, has called bees the "marriage priests" of the flowers.

The ancients believed that beeswax was made from pollen and did not realize that the bees gather pollen, not to form containers to hold their nectar, but as food—true bee "bread," the highly nitrogenous food for the tender babies in their charge. So these yellow pollen grains serve a dual purpose in Nature's economy, and the honey producer finds it of value to be well posted on the pollen-bearing flowers, especially those which furnish the pollen for the brood-rearing in early spring.

The person uninterested in either flowers or bees will see a bee on a flower just as "a honeybee on a flower getting honey;" whereas, as a matter of fact, it may be getting pollen and may not be a honeybee at all. It may be anything in the order of Hymenoptera from a bumblebee to a little, light-bodied wild bee, which more closely resembles a fly than a bee. Bees often make a great ado

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while gathering pollen; but, if we watch closely and know our sources of nectar and pollen, we need never delude ourselves through superficial observation that they are filling up the supers.

Delightful Botanizing Trips.

This observation of flora, requisite to production of a maximum crop of honey, is one of the pleasantest activities connected with beekeeping. If all our bees are in one place—and that at home—it may not take us far afield, but we shall find that, in covering the territory within a radius of a mile or a mile and a half of our bees, we shall make many discoveries and see many interesting things. Especially is this true through the visits being at different periods throughout the season, and particularly so if one lives in the country. We shall be astounded that only half a mile from home there can exist a thicket in which we never before set foot; or a clearing in the woods, maybe; or a part of the swamp never before explored—just through force of habit and lack of a sufficiently strong magnet to draw us there. A notebook, in which are jotted down the dates of blooming of different honey plants, will be interesting to compare from year to year.

Heather (pink flowers).—This is an important honey plant in the British Isles and parts of Continental Europe. It occurs in this country locally in the New England states only.

Some years an entirely new nectar source will appear, such as wild carrot (Queen Anne's lace), which the next year may be entirely non-productive. Nectar secretion is dependent on certain conditions of atmosphere—temperature and humidity—also the seasonal conditions of soil and plants which vary so much from one year to the next. I do not pretend to understand the scientific reasons for all the varying conditions in honey plants and their secretion of nectar, but it is often extremely interesting to try to see the real cause and to comprehend the natural process in some particular case.

Children always love to go for a walk through the woods and fields on Sunday afternoons, especially if there is an object in view, such as seeing what the bees are working on. And how refreshing and stimulating it is to throw off the cares of the farm or the house or the business and get out in the open country alone with all the beautiful natural things, where the air is clean and fresh and all is happy and serene! We come back with a different point of view.

The Honey Sources of Massachusetts.

Perhaps there is a big blueberry pasture down back of the house from which the bees produce that wonderful, thick, rich honey, dark amber in color, with a reddish tinge and a superlative flavor. This will need occasional inspections to see just when it is going to bloom. Blueberry and huckleberry bushes like an acid soil and seem to love many of the stony New England hillsides where the bushes often mingle with those of the sumac, which blooms later and furnishes a pleasant honey, light in color and of a rather greenish shade. To my taste, the blueberry honey is the honey "par excellence" of New England. Maybe the clover honey producers of Vermont will take exception to this statement, but nevertheless I do not retract it. The color is certainly characteristic of most Massachusetts honey, for here we do not get many of the rapid, heavy honey flows which commonly give light honey. Though we do sometimes get a splendid light aromatic honey from apple bloom (if the weather is warm and favorable) and in certain sections, notably on Cape Cod, get a tremendous flow in early August from clethra, most of our honey flows are not very heavy but last some time and dribble along through the whole summer, from the early maples through the goldenrod and aster bloom. Unless honey from the different honey flows is very carefully kept separate, the producer of honey in Massachusetts will find his main stock of extracted honey of a decidedly dark-amber hue.

In my locality, the willows and poplars blooming in early April yield the first pollen and nectar of the season; then come the elms and different varieties of maple. In early May we have fruit bloom; first the plum, then the cherry, the pear, and finally most important of all, the apple about May 10. This bloom never lasts more than two weeks, and the

weather is often too cool for much surplus production. Soon after this, the blueberries and huckleberries bloom, some years yielding very plentifully. My next honey comes from alsike clover the second week in June. After the sumac, there is ordinarily a lack of nectar coming in through the last weeks of July. In August I have a nectar source quite uncommon in this country—heather. Real Scotch heather! And three or four acres of it only a quarter of a mile away from my home apiary! It grows on a large estate and is carefully propagated in the greenhouse, then set out on once-wooded hillsides from which the brush is cut away and kept cut so the plants will not be smothered. I never have secured a surplus from it, as it comes just at a time when the bees' stores are somewhat depleted, and it is almost entirely stored in the brood-chamber and used in rearing brood. Occasionally I find a little in the supers—enough so that the honey when extracted is dark and muddy colored, somewhat resembling honeydew in appearance. A light scattering of clethra comes into bloom at this time as well as other plants forming minor honey sources. The last honey plants of the season are the goldenrod, accompanied or closely followed by the little fine aster. The honey of the former is a real gold in color and of good flavor when well ripened. Aster honey is quite light but can almost never be secured unblended. Other parts of New England get a surplus from white or sweet clover, from wild raspberry and from linden or basswood.

Wherever we live, we still find variations in the honey flows of our locality, and it is well to study the sources of nectar thoroughly; for even three or four miles away from home there may be quantities of some very important honey plant, to which we can move our bees at blooming time, or where we can locate a permanent apiary. Let us increase our intelligence and make the most of our natural resources.

South Lancaster, Mass.

DISPOSAL OF CAPPINGS

Also a Study of Fermentation in Honey and Its Causes

By J. A. Munro

SHORTLY after the first honey extractor was invented, it proved to the beekeeping fraternity to be more of a curse than a blessing. This was not due to the fault of the machine, but rather to the fault of the men who used it. In order to save themselves extra work in uncapping combs of honey, they extracted a good deal of it before it was capped, with the result that this underripe honey fermented. For a while the extractor was in disrepute until it was learned that there was a wrong and a right way to use it. The discovery of other beekeeping devices followed the invention of the extractor, and each one in turn was tried out and eliminated if it did not further the interests of beekeeping.

Fermentation in Honey from Capping-Melter.

The capping-melter is probably one of the devices used in modern beekeeping which is still in the balance; and its value, like that of the honey extractor, probably rests in the precautions taken when using it. Many beekeepers consider the capping-melter an essential part of their equipment, while many other beekeepers consider it a nuisance. The main difficulties experienced with honey from the capping-melter is discoloration of light honey when mixed, or fermentation and consequent spoiling whether it is mixed or kept separate, due to its abnormal water content.

During the summer of 1921, honey taken from the capping-melter and honey taken directly from the extractor were stored in ten-pound pails in a dry and well-lighted room of the Apiculture Building of the Ontario Agricultural College. In December, upon examination, it was found that all of this honey was granulated. The honey from the capping-melter was fermented, while the honey from the extractor was in good condition. The fermented honey, it may be said, differed from the other in that it was in a bubbly or gassy condition. A separate quantity of each of the honeys was transferred to jars and liquefied by placing them in a water bath, and gradually raising the temperature to about 145°F., holding that temperature until both samples were completely liquefied, after which they were analyzed. The fermented honey was labeled No. 15, and the unfermented No. 16.

The specific gravities of the two samples were taken with a hydrometer graduated for heavy liquids, and the color was determined by the Root honey grader. Both samples were a light amber. The flavor of No. 15 was decidedly unpleasant, and the body was of a watery

consistency, denoting that it contained an abnormal amount of water. The reason for its watery condition is clear to any one familiar with extracting. The beekeeper, to facilitate the uncapping of his honey, either uses a steam-heated uncapping-knife or dips his knife into hot water before taking off a slice of cappings. The cappings fall into the melter, accompanied by excess water which has adhered to the knife. In the process which follows, a certain amount of evaporation may possibly occur, but this probably is not sufficient to remove enough water to bring the honey to normal. The result is that a poor grade of honey comes from the melter.

When Honey from Capping-Melter Can Safely be Mixed with Other Honey.

Some beekeepers make it a practice to pour the honey which accumulates from the capping-melter into the settling tank, thus insuring its being mixed with well-ripened honey. This procedure will probably give satisfaction in most cases, but if the conditions should be unfavorable it might cause serious results to the general quality of the honey. When the honey is of high quality, that is, if it has a low water content, the addition of comparatively small amounts of honey from the capping-melter would not impair the quality of the honey to any noticeable extent. But, on the other hand, when the water content is already high, the addition of honey from the capping-melter would probably bring the water content to such a point as to allow fermentation.

Evaporating the thin honey to a proper consistency might possibly solve the problem, and it would also kill the bacterial ferments. The evaporation of honey should be a fairly simple matter. It would only differ from the evaporation of maple sap in that high temperatures would have to be avoided. Honey subjected to a temperature above 165°F. will turn to a dark color and assume a change in flavor.

Results of Analyses.

No. of sample.	Per cent water.	Per cent solids.	Specific gravity
15	26.35	73.65	1.370
16	21.7	78.3	1.401

A brief study of the above-tabulated results, in which sample No. 15 represents the fermented honey and No. 16 the unfermented, shows that there is a difference between the properties of the two. Sample No. 15 showed a lower specific gravity than No. 16. This would indicate that it had a lower sugar concentration, which would partly account for the fermentation change. Honey, it may be said, is an ideal medium for the growth of certain micro-organisms, but if the sugar concentration of the honey is above a certain per cent, the growth of these organisms will be prevented. The analysis of No. 15 showed it to have about 73 per cent sugar, which was high enough to inhibit the growth of the organisms which produce fermentation; that is, if the honey would remain in a thoroughly mixed condition, but honey of this kind does not remain uniformly mixed. After standing for a period of time, the watery part, being the lighter, rises toward the surface, which lowers the sugar concentration at the surface of the honey to the point where fermentation could take place.

Capping-Press and Capping-Melter Compared.

For the sake of efficiency in the uncapping of honey, the use of a heated knife is essential. The most common method of having a knife hot is to use a steam-heated knife or else the ordinary kind that is heated by dipping it into hot water. With both of these methods, care must be exercised or an appreciable amount of water will get into the cappings. A good deal of this excess water can be eliminated by giving the knife a brisk shake before removing the slice of cappings. This practice will reduce the excess water in the capping honey below the danger point, and, if this precaution is adhered to, the honey from the capping-melter would probably be all right to mix with the rest of the honey. However, should the rest of the honey be light in color, it might be well to keep the honey from the capping-melter separate so as not to darken the light honey by mixing the two. Where a capping-press is used during extracting instead of a capping-melter, this feature of the darkening of the capping honey will not occur. There will, however, be practically no difference in the amount of excess water which the capping honey contains, whether the melter or the press is used. The problem as to which device to use in the disposal of cappings will resolve itself into one—whether to use a capping press and lose a small percentage of the honey which cannot be pressed out, or to use a capping melter and have discolored honey.

Manhattan, Kansas.

[Fermentation is sometimes quite a serious problem, especially if honey must be held over until the next summer after it was produced. Sometimes honey, thought to be well ripened before extracting, will when held over begin to ferment as the weather becomes warm, often resulting in the cans becoming swollen and the honey leaking out at the cap. The above analyses show the importance of having all of the honey thick enough to prevent fermentation.—Ed.]

DEADMAN SUPER CLEANER

How to Clean Extracting-combs Without Robbing and Save the Honey

By G. A. Deadman

THE name "super cleaner" has been given to a device for cleaning the honey from combs after extracting at the close of the season. This "super cleaner" has already been described and illustrated in Gleanings in Bee Culture and other journals, and has been favorably commented upon. It might be well, however, to go over it again, especially since we now have a new feature that is very much worth while.

I assume it is generally agreed that extracting-combs should be cleaned, for when this is not done, apart from not being so nice to handle, the honey which remains in them over winter draws dampness from the air, and too frequently sours. It is therefore worse than wasted.

Worse Than Wasted.

In more ways than one, the honey left in these combs is worse than wasted, even when cleaned out by the bees in the usual way. The excitement brought on by having them robbed out does more harm than good. Knowing this, it is more than a surprise to me that Morley Pettit, who is a recognized leader in apiculture, clings to the old way, and on page 98 of February Gleanings in Bee Culture says: "Then the cleaning out of hundreds of supers from our other yards, after the last extracting, may do more harm, by reducing vitality, than it does good by stimulating brood-rearing." Nothing is said about the extra work involved by that way; nothing of the danger of spreading disease, and nothing of the loss of hundreds of pounds of honey that could have been saved.

We consider ourselves paid for any work involved by our methods, in the honey that is saved. With our method of cleaning, the supers are put out as fast as they accumulate in the extracting room, and not held to be cleaned later.

The New Feature.

The new feature, which we have tried one season in a limited way, possesses great possibilities. The idea is to have all of the supers cleaned in a bee-proof room connected with the extracting room. This building should be long enough to accommodate along one side the required number of colonies used as cleaners having entrances through the wall, and there should be space to run the supers behind them. I would have space enough behind these to contain some, if not all, of the supers after the cleaning is done, these to be left here until gone over preparatory to next season's use.

By this method one could get along with a smaller honey-house, and, if the colonies used as cleaners are left right there all winter, fewer packing cases will be needed.

The upstairs of the honey-house could be used as the cleaning room, but I like the idea of having it adjoining the extracting room.

We have in this room boards nailed together to make a platform wide enough and long enough to hold four supers. These are on castors, the kind that screw on. We pile the supers on these, six high (24 in all), then push them back out of the way, and have another placed close to the one who takes the frames from the extractor. These empty supers are then ready to be run into the cleaning room and unloaded directly into the super cleaners. Just think of the work that can be saved, of being free from robber bees, of the honey that is recovered, which is otherwise probably worse than wasted.

Use of Artificial Heat.

Another thing—this building, by conserving the heat, permits the cleaning process to go on longer, especially if heated artificially. Supers could then be cleaned when honey is extracted so late in the season they could not be cleaned by the outside method, for bees will not do much after cool weather sets in.

I have had two cleaners under cover, and it was a real treat to do this work when we pleased, and to see the robber bees making frantic efforts to get through the screen. Not only this, but the bees doing the cleaning are more subdued.

How the Super Cleaners Are Used.

In figure 1, the supers have been taken off and placed temporarily on the adjoining hive, and the stand is being placed in position. The colony to do the cleaning is moved in front when put in place. It does not matter if it is not located exactly as before. When doing this, place the bottom-board, with the bees thereon, at the entrance instead of shaking them off. The buzzing starts and all quickly go in.

In figure 2, the colony to do the cleaning is in place. The assistant is putting the first super in place. There are 19 on the wagon yet to go on. When loading these, sugar bags, cut down the seams, are placed between each layer as well as

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on the wagon. They help in keeping it clean, also help to keep the supers in place and lessen robbing. The best time for the job is in the evening or during a rainy day, if one is sure it will keep on raining till sunset.

Fig. 1.—A strong colony free from disease is selected to do the cleaning. The hive is then set aside and the platform, which is really six bottom-boards on one floor but having openings between them, is put in place.

It is not our custom to put a full load on one stand at one time. We have several going, and put half or some on each. Recently, instead of putting all deep supers on a stand, we put on a row of half-depth ones first. Then when all are cleaned, and we wish to replace with a fresh lot, we still leave the lower half-depth supers as the lower ones require a little more care in handling and there are more bees to bother with.

Fig. 2.—The colony is placed on one of the divisions of the platform. The remaining five divisions are for the supers to be cleaned. In the illustration the first super is being put in place. The platform holds 20 supers which are tiered up four high.

Figure 3 shows the finished product. That frame of honey, capped to the bottom, is only one of many that we produced from the wet combs. When supers are scattered over the yard, as many are, this honey is worse than wasted. I am sorry that I have no photographs to show some partly filled sections that were put on, that were filled and sealed when taken off. By uncapping partly filled sections and piling the supers on the platform, the bees will empty them and finish others that are nearer completion.

How to Make the Super Cleaner.

Two by four inch stuff is not too heavy to nail the floor to. Place them sufficiently far from the ends to prevent the bottom from sagging in the center, because, if it does, it interferes with the covers when placed on top of all. Under each cross-section there is a short piece of lath which not only allows a bee-space but supports the supers, for these go down between the cross-pieces. The size varies with the size of the supers, so the simplest plan is to place five supers on the floor with a cover on each, these covers being fully an inch apart. Also place a hive on the floor to represent the colony doing the cleaning. Now make the

Fig. 3.—As the supers are cleaned they are taken away and others put in their place. The honey from the wet extracting combs is stored in the super instead of being wasted as in other methods. Note the well-sealed combs of honey that has been stored from the wet combs.

cross-strips wide enough and long enough to go between. It is well also to nail narrow strips all around the outside, wide enough to come a little above the bottoms of the first supers. Do not allow much entrance room. Having so much super space lessens the need of it; ⅜ x 2 inches may be enough. If the house plan is adopted no bottoms are required, only the lath and cross-pieces.

Brussels, Ont., Can.

[Mr. Deadman described this method of cleaning extracting supers in Gleanings in Bee Culture for July, 1916, but for some reason others apparently have not been as successful in having the bees clean the combs and store the honey as has Mr. Deadman. The method certainly merits further trial and study to learn the reasons for success or failure. Mr. Deadman's success may be due to some little detail that has been overlooked by others. If so, it is time we should be finding it out.—Editor.]

FROM THE FIELD OF EXPERIENCE

CLEANING EXTRACTING COMBS

A Problem That Has Not Been Solved Satisfactorily

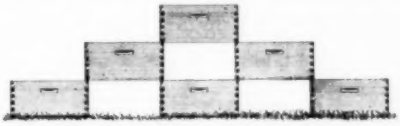
The care of extracting combs after extracting is a question which has, in all probability, not been solved to the satisfaction of any one. Various methods have been advocated. One was to store the combs wet as they come from the honey-extractor, and put them upon the hive in that condition the following season. This plan has never appealed to me. Honey is strongly inclined to draw moisture from the atmosphere; covers are not often available and the honey granulates; and this granulated honey tends to cause granulation of the new honey crop, although the bees do clean up the cells in the storing. Then, if the last extracting is dark honey such as buckwheat, even the small quantity of dark honey will affect injuriously any white honey crop of the coming season.

My old friend, Mr. Deadman, advocates a platform upon which stands one colony of bees, and upon this platform are placed quite a large number of supers with wet combs. The whole arrangement is constructed so the one colony can clean out the combs, without outside colonies having access to them. This necessitates a special platform and an extra cover for these piles of supers, equal to about one cover for every pile of six supers. This has not worked to the satisfaction of many beekeepers and in any case has not found much favor.

I have tried piling the wet extracting combs on hives, as far as I could judge placing piles six supers high on the strongest colonies. Contrary to the practice of some good authorities I do not like to super hives after extracting. There is a certain pressure on a colony or on the room in a hive when the brood-chambers and the supers are well filled. This results in much honey (if it is there) being moved from the brood-chamber where the pressure still exists after extracting and the bees putting it into the emptied combs in the supers. As a result, when we go to pack the bees or prepare them for packing, we have to shake the bees from these extracting combs and then in robbing time have a lot of partially filled combs to contend with.

Let me say that I have never believed that a bee "once a robber is always a robber." To me that is bunkum. I have also failed to observe that a bee which lies at the entrance outside the hive for days becomes ever after useless. Under the old management when colonies often hung out for days before swarming they would, of course, cease to be honey-gatherers. However, next to the well-known plan I am about to give, the best plan I know of is to pile the supers with wet combs upon the strongest colonies.

My plan is to wait until I have at least about one super to each colony in the apiary, and then, say, two or three hours before the bees stop flying for the day set the combs out a hundred feet or more from the apiary. By giving the super a quick shake sideways one can learn to spread the combs fairly well so the bees can reach almost every cell in the combs of that super. The combs should then be piled so the bees can get at the top and bottom of each super with the least obstruction, and the most (but by no means all) of the excitement will be over by night. Of course, if the



The supers of wet extracting combs are piled so the bees have free access to the combs at both top and bottom.

hives are not carefully examined for American foul brood during the season this plan is inexpedient. As soon as the combs have been robbed out the supers and combs should be protected against the weather.

This season I expect to run two 8-frame extractors so as to reduce to a minimum the amount of honey left in the wet combs. With fairly rapid work using one extractor, it is an easy matter to leave 2 to 2¼ pounds of honey in each set of combs in a 12-frame super.

R. F. Holtermann.

Brantford, Ont., Can.

CARE OF EXTRACTING COMBS

Some Necessary Precautions When Using the "Rob-out" Plan

Whether we run few bees or many, the problem of caring for the extracting combs, after the last extracting, is deserving of careful consideration. Each

plan that has been presented has its advantages, but after trying all the plans suggested, we have adopted methods which will not be changed without good reason.

To replace inferior combs which may be found in the brood-chambers in spring, we prefer combs which have not been cleaned out by the bees, as they "take to" such combs very freely. Where inside storage room is available, a sufficient number of such combs of the very best quality should be stored, to replace all inferior brood-combs found during spring manipulation.

We tried, for years, to induce the bees to clean the extracting combs by piling the supers back on the hives at the close of the season, but no known method secures this result. We, therefore, resort to the easy, rapid and satisfactory plan of piling them out in the apiary with certain precautions.

If there are a large number of colonies which can work on the wet combs, the more tender ones may be badly torn, unless a great number are put out at once late enough in the day so, at the close of flight, the job will be about done. The combs are best spaced wide, not over seven in an eight-frame super, or eight in a ten-frame super, and the hives are "staggered" or otherwise piled so as to permit free access to the bees.

We have even dipped the supers of comb into a tank of water, so as to give all the bees all they can do in carrying this thin sweetened water to the hives, that there may be less danger of damage to tender combs—a plan which I believe is due to the late L. Stachelhausen.

The Deadman plan has not succeeded with us, perhaps because of our cool nights, and why should it be desirable when the "rob-out" method is so much quicker? The beginner or the amateur in the city should not use the "rob-out" plan, for the bees may be quite cross for a few hours. It is best and safest to contract the entrances of all colonies before setting out the combs, if one is at all nervous as to the possibility of serious attacks by robbers on any colony, though I seldom find this necessary. When dry, the combs may be carefully stacked up outdoors or in, and covered so as to prevent mouse depredations. If warm weather continues late in the fall, it may be necessary to fumigate them to kill any bee moth that may begin work on them; but in this locality, by the time the moth has begun work, cold weather comes and puts a stop to any damage from that source.

If there were a few stray spores of American foul brood in some of the combs there would be far less danger of spreading the disease next year, when the combs are put back on the hives, by having the combs cleaned in a small apiary by the "rob-out" plan, for such clean dry combs, seldom or never transmit disease.

This "rob-out" method is the plan which I have practiced, in the main, for the past 22 years with thousands of supers, and for nearly 20 years American foul brood has been in this and near-by counties.

In the hands of a careful man, this method is no more likely to spread disease than any other plan of cleaning the combs, for the combs of no colony showing disease are ever knowingly put out in this way. If a few cells of foul brood are overlooked in the brood-chambers, no contamination has resulted where the super combs have been set out in this way, for we aim never to allow a single super of such combs to escape us, although this may have happened in some cases.

In this connection, it would appear to the practical and extensive producer, who has been familiar with disease for years, that much that has been written on the subject is hysterical rather than practical, for the careful beekeeper has nothing to fear from the "rob-out" plan of cleaning combs, nor from the feeding, for spring stimulation, of boiled honey from colonies having American foul brood.

In order to get your combs cleaned quickly, safely and well, use the "rob-out" method, with precautions and common sense. E. F. Atwater.

Meridian, Ida.

THE APIS CLUB IN AMERICA

Movement among Students Interested in Beekeeping in American Universities

With the widespread interest that exists in apiculture in the United States, it is but natural that there should be many students in our universities who are interested in this subject. Indeed, many of them have apiaries at home.

This interest has, in several cases, crystallized into the idea of forming local clubs. Such local organizations have, up to the present time, been developed at Wisconsin, Iowa, Penn State and Cornell. Of these four, Wisconsin was the first. It would seem that if more local societies were developed it would be worth while tying them together in some form of national organization that might not only greatly stimulate interest in the study of apiculture but also result in mutual benefit to the different chapters

of the organization. Even a half dozen local societies might form a good nucleus for the starting of a national organization to be known as "The Apis Club of America."

Some of the local societies have been quite active. The Apis Club of the University of Wisconsin recently put on a bee show in the Agricultural Auditorium at Madison. The show, which was very successful, included movies, a litle skit and demonstrations with live bees. This first show worked out so well that something similar will probably be repeated next year.

The Cornell University Apis Club, organized by the students in the New York State College of Agriculture at Ithaca in December, 1922, has, since its initiation, held eight meetings, the programs for which included papers, discussions, movies and practical demonstrations at the University apiary. At one of three meeting A. E. Lundie gave the club the results of his investigations on the "Durations of the Flight of Bees."

Prof. H. F. Wilson of the University of Wisconsin has been an active advocate of the development of a national organization of the type mentioned above, and all those who are interested in helping this along should communicate with him.

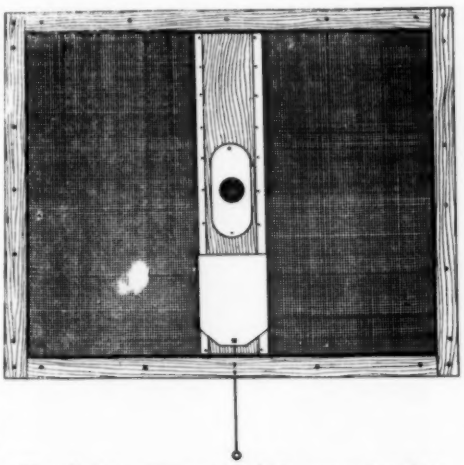
Madison, Wis. Donald T. Ries.

INCREASE AT LITTLE EXPENSE

An Easy Method of Making Increase at the Close of the Season

At the close of the honey flow colonies are often so strong in bees that it pays to make increase from them at that time. By so doing the old bees, which would not under any circumstances survive through the winter, can be further utilized, after honey gathering has ceased, to help in building up new colonies. The honey flow here is usually at an end about the middle of August, and the plan that has been adopted for making this increase has been very successful. Towards the close of the honey flow two frames of maturing brood, with adhering bees, are put into a fresh hive on a new stand so as to form a nucleus. Eight additional frames, containing built-out combs, are added, and the entrance is closed with a wisp of grass. Young queens, that have been reared at home for the purpose or purchased, are then introduced to the nuclei. These will usually be accepted without any trouble, and as soon as they begin to lay it will be time to strengthen the nuclei by adding bees from other hives. This is done by bringing into use the double screen-wire super clearer, which has a slide over the opening containing the bee-escape (as per illustration). The double screen-wire super clearer is placed over the nucleus, with the slide closed, and a hive body from one of the populous hives, containing combs and bees, is put on top of it. After two or three days the slide is withdrawn, by means of the wire operated from the outside, so that the bees can then pass down through the bee-escape and unite with the nucleus below. The top story can afterwards be removed, clear of bees. It is advisable to vaseline the springs of the bee-escape so as to prevent the bees from propolizing them. The newly-made colonies can be fed either with sugar syrup or given sufficient frames of honey to carry them through the winter. These colonies winter well, as there is a large force of young bees from the new queens. W. J. Sheppard.

Nelson, B. C.



The double screen-wire cloth escape-board is an important factor in making increase at the close of the honey flow.

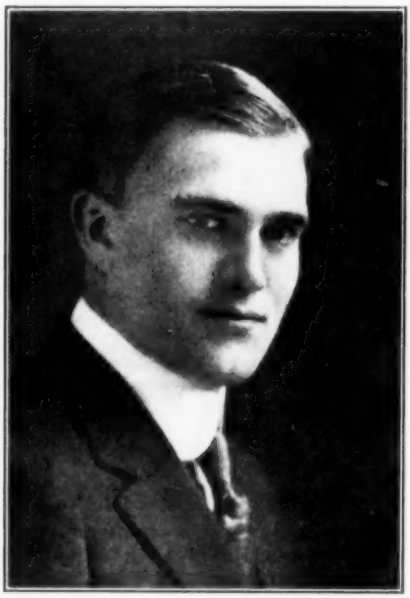
DEMONSTRATION APIARIES

The Busiest Bee-Extension Man in the United States and His Work

Perhaps some of you may question this statement as given in the heading; but the man I refer to, Newman I. Lyle of the Extension Department of the Iowa State College, Ames, Ia., has already in operation 100 demonstration apiaries scattered in various parts of Iowa. He hopes by another year to increase this number to 150. Last year he held between 600 and 700 meetings of little groups of beekeepers; and the coming

year he expects to increase this number to 1000 or more.

In the demonstration apiaries the colonies are divided into two groups, one group to be left in the same hives and managed as they had been previously, while the other group must be in standard equipment and managed according to



Newman L. Lyle, extension specialist in bee culture, Iowa State College, Ames.

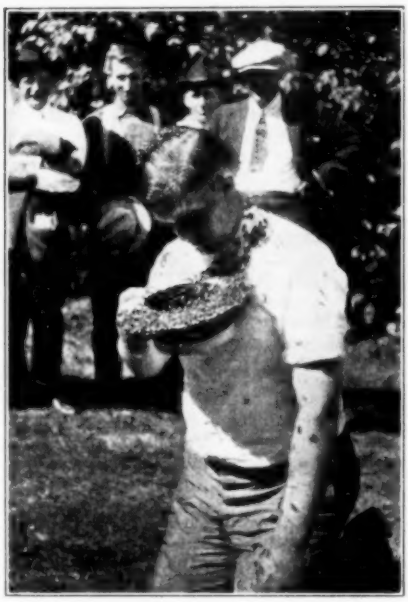
directions given by Mr. Lyle. At the close of the season the product from each group is checked in order to show exactly, in pounds of honey, the advantage of the better management. No further argument is necessary. The increased yield speaks for itself.

A man who can do this is a human dynamo. He could scarcely do this if he did not have the backing of his superiors. He is scarcely past his majority, likable and lovable, with a half smile that is playing on his face most of the time. If I ever saw a fine specimen of physical manhood, mentally keen and alert, fairly bubbling over with enthusiasm in this work, it is the subject before us. From the few occasional remarks I heard, I imagine that there are some young ladies in Iowa who will agree with me.

Mr. Lyle was born and brought up a beekeeper. He graduated from the Iowa State College, specializing in bee culture. When he began his work he conceived the idea of establishing demonstration apiaries at various strategic points in the state. In these he recommends standard equipment, and then he requests the owner of the demonstration apiary to let him have the colonies which he sets aside operated on plans that he recommends. So successful has he been that colonies operated on the plans he has laid down show an increase in honey production of from 20 to 50 per cent. This kind of "deadly parallel" is having its effect.

I have already told our readers how C. L. Sams of Raleigh, N. C., the bee-extension agent for that state, is doing something similar, only in this case Mr. Sams shows how colonies transferred from box hives into modern hives are able to make an increase of from 50 to 1000 per cent in honey production. Mr. Lyle of Iowa seldom runs across a box hive, but he is showing pretty clearly how even modern equipment can be made to yield very much larger returns.

It was my pleasure to follow Mr. Lyle in several of his extension trips last summer, and to see the work he is actually



A warm hatful. Mr. Lyle demonstrating at a beekeepers' meeting.

doing. Sometimes he calls in outside help, and sometimes he does all the "talking" himself.

In the line of selling honey and live-bee demonstrations I believe I showed Mr. Lyle some tricks of the trade that he will be able to use to good advantage. I do not think I taught him anything new in practical bee culture; but I did show him how to put a quart of bees on his head and shoulders and not get stung. He was an apt student, as will be seen by the accompanying picture. E. R. Root.

SIFTINGS

J. E. Crane

THE beautiful and somewhat unusual passing of A. I. Root seems to cast a shadow over the June number of Gleanings, and makes the things of time seem trivial compared with the realities of the future life. We find ourselves saying over and over again the words of the seer of three thousand years or more ago: "Let me die the death of the righteous, and let my last end be like his." How delightful it is that we all, imperfect as we are, may yet have faith in God and put our hands in his and walk in terms of friendship and fellowship with him! How much better is this than to go through this life, trying to make ourselves believe that life is a gamble and all things about us governed by some unknown and unknowable force!

* * *

What E. D. Townsend says on page 387 about putting up 60-lb. cans of good honey in shabby wooden cases is worth remembering. Such cases simply won't stand our American methods of handling freight. No, sir! it is a fact. They won't.

* * *

A. C. Gilbert, on page 400, makes some good points in fâvor of full sheets of foundation for sections. We shall use this year some 250 pounds of light foundation for sections and consider it money well invested. To begin with, it saves the bees just so much wax. They begin work in the sections more promptly and finish them in better shape, and when finished they are enough heavier to pay for all the foundation it takes to fill them. It is so much clear gain.

* * *

That there should be two stories for spring brood-rearing is discussed on page 379. We have practiced it this spring with very decided advantages; but let no one suppose for one moment that placing a second story over a weak colony, that is well supplied with honey, is going to help matters. It will be more likely to hinder. Better give it a comb of emerging brood from a strong colony, and wait a little. If you are a comb-honey man and have no conveniences for tiering up, you need not lose much, for you can take brood from your strongest colonies until all are full of brood and running over with bees at the opening of the harvest. Then you will not have much of which to complain.

One of the most fascinating subjects connected with bees is their ability to communicate with each other, and whoever shall fully decipher or completely unravel the subject will be held in high esteem by beekeepers the world over. Mention of this subject is made by the editor on page 378; also on pages 389 and 401 where odor is given as a means of communication, and this may prove quite true. Henri Fabre gives in one of his works some wonderful examples of how female insects can attract males in great numbers by their sense of smell. Let not the younger generation think that the problems are all solved.

* * *

"A pest yard for diseased colonies," says E. D. Townsend on page 386. This is a capital idea, whether you have many bees or few, whether you have American foul brood, European foul brood, or both. Such an arrangement can not be too highly commended. A universal rule in the treatment of both kinds of foul brood is to keep them from spreading, and to do this there is no better way than to remove every hive and vestige from a yard as soon as discovered. If this is desirable for colonies afflicted with American foul brood, it is much more desirable where the trouble is European foul brood, for the latter disease spreads very much faster. A colony of bees having American foul brood is doomed from the first.

* * *

On page 380 E. S. Miller gives some interesting theories in regard to swarm prevention. His theories sound well, and may work well with him; but our experience in requeening in swarming time, by removing the old queen and destroying queen-cells, has not been satisfactory, to say the least. Too many colonies seem to contract the swarming fever, without much regard to theories or the fact that the old hive will be left queenless if the bees swarm with the young queen. I have tried for many years to convince myself that a queenless colony will work as well as one with a queen, but have not succeeded, especially if bees are working in sections. Theoretically it would seem to be a decided advantage to reduce the size of a colony in midsummer, when little nectar is to be found, by keeping a queen from laying, but we have not found it to pay.

XUM

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.— May has come and gone, and today (June 4) at a meeting of the Riverside County Beekeepers' Club, it was unanimously decided that the honey crop in Riverside County for 1923 is one of the poorest in history. Bees on the sage and wild buckwheat ranges are reported as not making a living. Some beekeepers are feeding, a few are moving to Utah and Idaho, while others hardly know just what to do. Probably the most fortunate are those who have combs of last year's honey reserved. These, if used wisely, will go a long way toward carrying their bees through to the next season.

The committee on the Fair exhibit reported a premium list about the same as that of last year, and urge all members to make a special effort to help in making the club exhibit as good as ever. This being such a short honey year, it will tax the beekeepers to find enough choice honey properly to represent Riverside County. Charles Kinzie, who has been one on whom we depended largely for material for making a display, was so unfortunate as to lose his honey-house by fire. In the house were all of his tables, show cases, pressed flowers, honey samples, etc., the result of years of work. This loss will also cut into the exhibit.

William C. Reeves gave a good talk at the Riverside County meeting on getting bees ready for next year's honey flow. He said in part that there are four essentials—stores, queens, combs and hives. Taking off too much honey has often made the difference between a crop and no crop for the following year. Therefore he recommends leaving plenty of honey on the hives at all times. Requeen all doubtful colonies, thereby getting the colony in the best condition. Care for all combs and replace all drone-combs with foundation. Paint and repair all "shabby" hives, as with a little work an old hive will often fill the bill as well as a new one, at a fraction of the cost.

In selecting colonies to requeen, a strong, populous colony will supersede a failing queen itself, while a poor, weak colony will let a queen die and die with it. With a good honey flow on, one can do almost as he chooses; while, with conditions as they are this year, it is hard to get the results one would like to have.

Referring to my article in a recent issue of Gleanings relating to the manzanita bloom, I would like to say that, on May 26, when visiting our mountain cabin at Idyllwild at an elevation of 5500 feet above sea level, I found the manzanita in full bloom. There seems to be a variation from year to year in the blossoming season of this bush as well as other varieties of nectar-producing plants.

To observe the different stages of growth, as one goes up the mountain slopes, is an inspiration. From 700 to 7000 feet in a three-hour auto run is something one can not experience in every county.

One thing very noticeable this year is the profuse bloom on almost all plants, trees and shrubs and the almost universal dearth of nectar in the blossoms. Verily, we know little of the ways of Nature in these things. While we need the money and good crops are very acceptable, nevertheless much pleasure and contentment come from a work well done, and the beekeeper who keeps his apiary and equipment up in first-class condition will get much satisfaction even if he misses a honey crop once in a while.

Corona, Calif. L. L. Andrews.

* * *

In Northern California.— I am sure that all northern California beekeepers regret the passing of A. I. Root. His achievements are many, and it seems fitting to quote a small paragraph from Bailey's Cyclopedia of American Agriculture regarding this prominent American figure.

> It only remains for us to mention the work of A. I. Root in the United States. The friend of Langstroth, he set about the work of improving our hives and other necessary appliances and, with the true Yankee sense, succeeded in making American apiarian implements the standard of the world; and the present proud position of our apiculture, as the model for all others, is in no small part due to the work of Root, who took up the work of improving crude and imperfect apicultural tools until America was recognized as the land of beekeepers, bee-ranches, bee-appliances, honey and wax.

The amount of surplus gathered up to June, although below normal, has been considerably greater than last season. Inclement weather during blooming and the presence, to some extent, of both the major brood diseases account for the scanty yield. The orange crop was practically a failure. Mustard, in some sections, and eucalyptus produced nearly a normal crop. Owing to poor weather bees did not build up well in prune orchards. Where the season was early, sage did poorly, and it is still too soon to advise

regarding other mountain flora. During the latter part of May the weather bettered, and at this writing (June 4) mountain flora is secreting better than it did during the early part of last month. Generally speaking, bees are in good condition for alfalfa. This plant and star thistle are expected to yield a good surplus.

Beekeepers are showing increasing interest in exhibiting honey at fairs. In the past we have been rather backward in this respect. Our state association is contemplating big things at the State Fair at Sacramento this fall. It would be well for all beekeepers to get in touch with the committee in charge. Fairs help to popularize and advertise honey. It is one form of creating a demand, and incidentally it helps the beekeeper who is establishing a local trade to lay more stress on the attractiveness of his package. M. C. Richter.

Big Sur, Calif.

* * *

In British Columbia.—This has been a very favorable spring for bees in British Columbia, and present prospects point to another good honey season this year. Bees all over the province came through the winter in excellent condition, with very few losses, and as the weather generally has been so fine during April and May, with nectar coming in from willows, dandelion, fruit blossoms, etc., little or no spring feeding has been necessary anywhere. In the Fraser Valley, in the Coast region, the soft, or broad-leaved maples (*Acer macrophyllum*) and the vine maples (*Acer circinatum*) have yielded a substantial surplus, in some cases as much as 100 pounds per colony, a good proportion of the hives having had four stories occupied. A hive on scales showed an average daily gain of 6.4 pounds from April 25 to May 9, not including April 27 to May 2. In that section the weather was somewhat cold and showery from April 26 to May 2, in which interval there was a total loss of 6 pounds. Then there was a week of June warmth, over 80 degrees in the shade being registered on one or two occasions.

European foul brood is not very much in evidence now in the Fraser Valley where it was formerly so prevalent. The more general introduction of good Italian stock, improved equipment, and better methods of beekeeping, together with the good honey crop of last year, have had their effect in almost entirely wiping out the disease.

The good crop of last season has stimulated the beekeeping industry considerably, and a large number of two-pound packages have been imported from the South this spring. There has also been a steady importation of queens, since it has been pretty clearly demonstrated that requeening in the early part of the year results here in the building-up of stronger and more vigorous colonies with little desire to swarm, thereby considerably increasing the honey crop. A report that has just come in from the Bulkley Valley in the northern section of the province, at about the 54th parallel of latitude, states that bees in Kootenay cases have wintered well there without any losses.

A very successful field day was held at the Provincial Government Demonstration apiary at Bradner in the Fraser Valley on May 9th, under the auspices of the Lower Mainland Division of the British Columbia Honey Producers' Association. About 70 beekeepers attended, including six from the adjoining state of Washington. An invitation was extended to those present to attend the Whatcom County Beekeepers' Association meeting to be held at Sumas, Wash., on June 5 next. W. J. Sheppard.

Nelson, B. C.

* * *

In Texas.—The month of May promised much, but in most parts of Texas has given little. In the huajilla section the late frosts killed the plants and chilled such quantities of brood that the colonies were not strong enough to care for the belated honey flow. The flow began over most of this section on April 22 and ended on May 15. In normal years extracting would be general by April 15. The huajilla flow is supplemented by flows from Mexican persimmon, catsclaw and greasewood. All of these bushes give light-colored honey and add much to the bulk of the flow. The name "catsclaw" refers to several species of plants belonging to the genus *Acacia*. *A. wrightii* is the species of the southern portion of southwest Texas. It grows to be a tree from 20 to 30 feet in height and may bloom several times in a year if weather conditions are favorable. *A. greggii* is a low bush of the limestone ridges of central Texas, and reports indicate that it is a source of honey even in the Panhandle. *A. roemeriana* is a shrub from 6 to 20 feet high and belongs to central Texas. It is a good nectar producer, but not present in numbers large enough to add much to the flow.

The United States Department of Agriculture has just issued a very interesting bulletin on the fertilization of Pima cotton, in which are many references to honeybees. The part the honeybee plays in cross-fertilization is little known and is an open field for research. Many of the statements now in print on this sub-

XUM

ject are so vague as to be worthless. The great outstanding point is that, if there is doubt as to number of insects present to produce fertilization of plants, the beeman has an agent that he can supply in any quantity desired.

Wallace Park of Iowa Experiment Station has lately published an article on the language of bees. He interprets the "dance" of the loaded bee, a sight familiar to most beekeepers, to be a means of imparting the knowledge of a source of supply to the colony. We have been making notes on this action for the past four years and find much to substantiate Mr. Park. It is our belief, however, that the most of this action is for the purpose of unloading pollen and propolis. It occurs most frequently during that portion of the day and year when pollen is being brought in, in quantities and at times when the bees are gathering propolis.

During the last half of May Dr. M. C. Tanquary made a tour of the sub-experiment stations where bees are kept. He covered the stations in east, central and west Texas, and reports the bees to be in good condition. R. R. Reppert, extension entomologist, was with him at several places, and beekeepers' meetings were held. H. B. Parks.

San Antonio, Tex.

* * *

In Iowa. White clover has commenced to bloom, and the bees are ready for the harvest. Our bees were never in better condition than this spring, and other beekeepers here are of the same opinion. They have been able to get all the benefit from the different blooms that we have here, and in consequence have built up in fine condition. The dandelion flow has been the best I ever knew it to be. In fact, it has been even a little more than could be used for brood-rearing, and some colonies have stored quite a little. Formerly we never have had this happen, but the bloom from dandelion has been abundant this season, and, if it continues to increase as in the past year or two, we may expect a surplus in the future from this plant. Dandelions are still blooming, with clover coming close on to their heels.

Some have had swarms in May from this flow. Swarming will be in order from now on, and I am predicting plenty of it as the bees are feeling mighty prosperous. As soon as the clover opens up in earnest the apiarist that does not do some manipulating will have his hands full.

This part of Iowa should have more rain than it has had if the flow is to come up to normal. While we have had several nice showers in this immediate vicinity, just a few miles in either direction the rainfall was very light if any at all. The ground has little surplus to draw from unless we get a wet June. The hay will be light from lack of rain earlier in the spring, and pastures are not carrying the surplus grass they should for this time of year. White clover wintered well, and if we get the moisture we should have a crop of honey. I am trying out three kinds of hives in the same yard, with enough of each to prove something—the much despised 8-frame, the "standard" 10-frame, and the much bragged-on Jumbo. I am not as yet forming a conclusive opinion, but I will just whisper I had a fine big Jumbo swarm today. Sorry, but the best-made plans of mice and men "gang aft aglee." I have formed my opinion thus far, that if the bees swarm in hives of this size and have to be supplied with an extra body to prevent it (as we are compelled to do with either the 8 or 10 frame) they are no better than either of the others in that respect, and in some respects worse. However, I will stop just now before I get something started, and I will not say any more than to quote Dr. Miller, "Leave it to the bees."

Honey continues to move slowly, and I can not see why, with sugar as high as it is. Local demand is fairly good and has been, but where is the fellow that a few years ago was asking about carload lots?

Center Junction, Ia. W. S. Pangburn.

* * *

In Wisconsin.— From the time of the last snow in the middle of April until May 18, there was no rain. On the 19th rain came; on the 20th fruit bloom; and every day since has been a perfect honey day—cool nights, heavy dew, bright warm days. Rain came again on June 2 at night. It has been hot and sultry since then, with dandelion still heavy in bloom for half a day and some few heads of clover in bloom. Fruit bloom lasted a week. All strong colonies were supered just before. In a few days it was necessary to super all medium colonies and again super the strong colonies, and many of the best colonies had to be supered the third time. Never in our experience has the weather been so perfect for fruit and dandelion bloom, and the honey flow was the equal of any good clover honey flow. If it were possible for all colonies to have been as strong as they usually are for the clover flow, three weeks later usually, then we would have a fair crop of honey this year from fruit and dandelion bloom. Some beekeepers did not realize what was hap-

pening and failed to be on the job with supers, even though their colonies may not have been very strong. They did not get a considerable quantity of honey that they could have had by supering.

It has been too dry for the clovers, and the stand is below normal, more rain being needed. Unless the weather conditions are ideal from now on, we do not look for more than a small crop of clover honey.

The average farmer is still very ignorant of when and with what his fruit trees should be sprayed. Unscrupulous men, who are going from place to place making a business of spraying trees, are taking advantage of the farmers' ignorance and succeed in many cases in convincing them that the proper and only time to spray trees is in full bloom. They did spray many orchards in full bloom after they admitted to me that the government does not recommend spraying at such times. We are doing what we can to prevent this next year. These men did this just for the money, spraying when they otherwise would have to be idle or work at something else. As a last resort, "if necessary," we will refuse to pay taxes on bees as long as the town board or county board permits bees to be poisoned without sufficient reason. They cannot compel us to pay taxes on property that they permit someone else to destroy unnecessarily.

Greenville, Wis. E. Hassinger, Jr.

* * *

In Michigan.—In spite of the abnormally late, cool spring which caused an unusual amount of spring dwindling, bees in southern Michigan recovered wonderfully during fruit bloom and the dandelion flow. Spring dwindling was so bad in many cases that colonies which appeared to be normally strong in bees on April 1 dwindled away completely by May 15.

In fact, it seems as though the greatest loss of colonies came during the spring instead of the winter months. However, the weather was nearly perfect for a maximum yield of dandelion and fruit bloom during the latter part of the flow, and stronger colonies reached swarming strength with 10 to 14 frames of brood present. This sort of season is a fine lesson to show the value of good queens.

With so late a spring, the only colonies which will be ready for the honey flow are those headed by young, vigorous queens. Colonies that superseded their queens or that needed stimulation to get maximum brood-rearing are understrength. The importance of annual requeening is especially apparent, for enough two-year-old queens will break down, just when queens should be laying at their maximum every day, to cause sufficient loss from non-producing colonies to more than offset the cost of requeening.

As a rule, clovers are in good condition, thanks to occasional showers recently. In some sections the flow will be light from alsike and white clovers but prospects are good on the whole, especially in the Thumb district and heavy soil regions. The flow will be nearly on time this year although the season is about three weeks late. Many beekeepers will not have their colonies in condition.

The foul brood bill passed the Legislature, assuring the continuation of apiary inspection, disease control and eradication. Provision is also now made for co-operation between the county supervisors and the commissioner of agriculture in the hiring of local deputy bee inspectors in counties. Clauses were also included in the new law, making it a misdemeanor to sell diseased bees or equipment; also providing that extracted or strained honey sold in Michigan hereafter must show on the label the state in which the honey was produced.

At the present time the extension specialist in apiculture, Edwin Ewell, is very busy holding auto tours of inspection throughout the state with the co-operation of the local county agent and beekeepers' organizations. A total of 16 such meetings has been arranged for the month of June in various counties in Michigan. These auto tours of inspection are especially valuable to beginners who desire to become acquainted with different methods of manipulation and treatment for disease. Demonstrations are given in apiaries visited.

East Lansing, Mich. R. A. Kelty.

* * *

In New York—Forty per cent loss, mostly spring loss, probably pretty nearly represents the average in this part of the state, some of the better beekeepers reporting losses of only 10 to 15 per cent and some of the poorer ones having lost all. The remaining bees are building up rapidly now and promise to be in fair condition by the time clover begins to yield. Clover is very backward, but there is an exceedingly good stand, which probably will not begin yielding before July.

At this writing (June 4) fruit is still in bloom, and bees are getting considerable nectar from this source. We have less than the usual number of working bees at one yard and are inclined to blame it to dusting poison. From the dusting mixtures being applied to apples, the application has been drifting

to peaches that were in full bloom, on which the bees were working. Spray and dusting poisoning of bees is one of the big problems here. Prof. R. B. Willson and Geo. H. Rae are now in this vicinity making observations on the extent of damage being done and the possibility of devising a successful repellent to be used with both dust and liquid sprays. In co-operation with Prof. Willson and Mr. Rae we tried out some commercial repellent called "Beezoff," which seems to have no value at all. The bees continue to work on the bloom right along after being sprayed with this "Beezoff," besides which the material burned the petals and also the foliage where applied.

Grape owners around Sanborn, N. Y., claim to have discovered that growing buckwheat in the vineyards keeps the grape hopper away, as it does not like the smell of buckwheat. If this proves true and becomes the general practice, it will eliminate much of the late summer dusting and spraying of grapes, and also increase the acreage of buckwheat.

The Western New York Association will hold its annual field day meeting on Wednesday, August 1, at the home of Secretary John N. DeMuth, Pembroke; and the New York State Association will picnic on the following Friday, August 3, near Syracuse. Both meetings promise well. The honey market is pretty good in a retail way, with no change in prices. All fruit promises to be a bumper crop here again this year. Last year's crop was handled at a loss. We are wondering about this year's crop and almost wishing that something may happen to about half of it. H. M. Myers.

Ransomville, N. Y.

* * *

In Porto Rico.—The summer, so far (May 15), has been a very unusual one in Porto Rico. Last summer the more arid parts of the island were almost burnt up for want of rain. During January and February of this year the rainfall was about normal—a little heavy in spots, but since February rain has been more or less scarce. Many of the towns are almost waterless on account of the light rainfall. Needless to say, vegetation has suffered, and most crops are very poor in consequence. However, the bees seem to be able to make use of the unusual amount of sunshine, and stored some little honey in the hill sections during April. This is very unusual.

There has been a fair extraction made from the coast apiaries the last of March and in April. All reports I have so far had in the season are much better than those the past two or three years, which have been far from profitable ones on the island.

I have made numerous efforts to obtain a stand of sweet clover and alfalfa, but with indifferent success. I have succeeded in getting a small patch of alfalfa to grow blossoms profusely, but the bees pay no attention to it. To date I have had no success with sweet clover, but am trying out Hubam this year with an inoculated soil. I have succeeded in raising some very fine dandelion plants, which are now three years old and have yet to grow a bud or make a single flower. In trying out seeds in a different latitude from their habitat one never knows what vagrancy they will take. Most northern plants bloom themselves to death here, if they grow at all. The dandelion seems to be a great exception.

We have not had any rain in the vicinity of Aibonito (the middle of the island) for about six weeks. These short dry periods in the hills are a serious problem to vegetation. They react something like winter conditions in the North. Many trees and shrubs lose their leaves, and if any fruit is setting it frequently falls off. This leads one to believe that nature is getting down to business and is discarding much that the remainder of the plant may be able to secure enough moisture to exist on. In this way, many shrubs and trees become semi-dormant and possibly take a resting period.

Like California, the honey flow here depends on the rainfall. What the remainder of the year will bring remains to be seen, but many beekeepers are very hopeful and anticipate a much better yield this year.

Another thing which looks well to us is the present price of honey. In January, 1922, Porto Rican honey was quoted at 65c per gallon, New York City. The present quotation is 90c per gallon. As the overhead is the same, the 25c additional per gallon is net profit over the lower price.

Aibonito, Porto Rico. P. G. Snyder.

* * *

In Ontario.—Since my last report there has been a wonderful change in the condition of the bees in Ontario. Wherever bees wintered well, they held their own, notwithstanding the cool backward spring weather; but in localities where natural stores had been used, the bees were in poor condition in general up till May 15, with but little stores left in the hive. About May 20 the weather cleared, and for 16 days in succession the sun shone. This period took in the full blooming period of fruit, dandelion and whatever willow was not

killed by the frost referred to in my last letter. As a result, the bees boomed up rapidly. While the honey flow was not heavy from fruit bloom, enough nectar was gathered to carry them easily through till the clover flow.

Although the season has been late in general, clover is already showing many blossoms and bids fair to be yielding by June 20, a date not as late as in some past years. This is June 9, and for the past four days we have had soaking rains. Clover could hardly look any better, and, with the bees now in fair condition, prospects are normal for a crop of white honey. But one can never tell what will happen in the honey game, and personally I have gotten to the stage where I do little reckoning until I see the supers piled high on the hives.

Owing to some losses in the home locality last winter, a few packages of bees were brought from the South this spring. Two lots arrived the same day, one from Alabama and one from Mississippi. The Alabama lot was two days longer on the road than that from Mississippi—clearly because of some carelessness on the part of the transportation company or some of the employees. As a result the Alabama lot was in poor condition on arrival, while the lot from Mississippi was all right. A lot of ten packages, ordered for a friend, was shipped from Georgia. Practically all the bees in this lot were dead, and only four queens were alive in the queen cages enclosed in the packages. They had used practically no food, so the problem is what killed them? Possibly they were exposed to the direct rays of the sun or placed over some hot steam pipes.

It seems that the package business is still a risky one in many respects. Some neighbors got bees in packages by mail, while ours came by express. In every instance the packages sent by mail arrived here in fine condition. Is this an exceptional case, or are the mails safer than the express for live bees?

Dead package bees are very unsatisfactory from every angle. I have found the shippers of bees and queens a very fine bunch of men, generally speaking, and, while I always feel that I can not afford to pay for dead bees, I realize that it means a lot for a shipper to lose a shipment and get no returns for all his work and outlay for cages, bees and queens. Of course, we have bought only a few bees in packages, but I figure that, if the business usually shows a loss in proportion to our small dealings in the past years, the total loss must be very heavy.

In common with many others, I was pained to hear of the death of A. I. Root. While he had long passed the allotted span of three score and ten, yet his general activity did not give one the impression of his being very old, and I little thought of hearing of his passing so suddenly. I met Mr. Root in person but once—at the Detroit convention held in 1908.

As I write, the group picture of the members in attendance at that convention faces me from the wall, and, as I look over the picture, I can not help but note how many have passed over with whom I was acquainted. As I recognized but comparatively a few of the 237 faces shown on the picture, no doubt one would be surprised to know just how many of that group have left us. If I remember correctly, Mr. Weber of Cincinnati was one of the first to go, as I heard of his death shortly after the convention. Then followed our friends Hutchinson, McEvoy and others in succession, and so the roll call continues. Not so long ago Dr. Miller answered the call, and now our old friend A. I. Root has said goodbye and written his last admonitions so far as earthly things are concerned.

Many of these friends are not really dead, as their influence reminds us that there is a promise of "being dead but yet speaketh," and surely with many of these old friends who have passed away, we can say that "their works do follow them." It is not my custom to write along lines of this nature, but this morning I feel impressed to express my feelings in this way. Whether it is wise to do so in a secular journal may be questioned by some. In closing, I cannot help but recall the fact that Dr. Miller, Mr. Root and others constantly called attention to their hope of even better things in the world to come, and I for one cherish the hope of some time meeting these men again.

J. L. Byer.

Markham, Ont.

* * *

In Northern Ontario.

Last winter was the longest, hardest winter on bees that we have ever experienced in this district, and this after the poorest honey season yet. We wintered outside in wintering cases, each holding four hives, our packing being finely chopped pea-straw, with which we have had splendid success.

We lost fully 25 per cent through outdoor wintering. Some of the colonies that died had at least 20 pounds of honey in their hives, and all had quite a bit. We believe it was the poor quality of this late-gathered honey that caused dysentery and death. We fed, on an average, 20 pounds of syrup to each colony last autumn, and united weak colonies to make strong ones.

Webbwood, Ont. Agnes Hunt.

XUM

HEADS OF GRAIN from DIFFERENT FIELDS

An Apiary in Siberia. I am sending a picture taken near Habarovsk, Siberia. The old beekeeper knew of your company and had seen your paper, but he is unable to read. He made all of his equipment himself, including a centrifugal honey extractor. The Russians love honey. Nearly every peasant keeps bees. If they ever get a stable government there is a good future for trade with them.

A Russian beekeeper in his apiary of modern hives near Habarovsk, Siberia.

Ralph L. Dorman.

Painesville, Ohio.

Acorn Calix in the Place of Queen-cell. To H. Nagae, one of my friends, came the idea to try acorn calixes as queen-cells, one day in the season of 1922. His idea with those calixes of acorn was not as queen-cell-holder, but as the cell-cup itself. The acorn calix was not painted with any wax at all. He attached those acorn calixes to the under edge of a comb in the hive, according to the natural manner of queen-cell building. The bees were, of course, in their full tide of swarming-cell building. The queen laid one egg in one of those acorn calixes. There were other queen-cells naturally built, in which some eggs were laid. The egg in the acorn-calix cell was developed, and at last a good queen emerged in the normal period. Of course, the bees built up a wax cell wall on the acorn calix cup after the egg was laid. Don't you think this is an interesting experience?

Yasuo Hiratsuka.

Tara, Gifu-Ken, Japan.

Moving Bees Short Distances. When you want to move a colony of bees a short distance, it is not at all necessary to move the hive only a few feet each day. Instead, move the colony directly to where you want it placed and leave an empty hive on the old stand as shelter for the bees that may return. As soon as the bees cease to fly in the evening take the hive gently from the old stand with the bees clinging and carry it to the new location, setting the hive down in front as near as possible to the entrance. Then see what a happy lot of bees they will be. They will never return to the old stand again.

Elora, Ont. G. W. Strangways.

Superior Quality of Honey in the Far North. Last year we tried an experiment in extracting before the clover honey flow began, labeling our honey, "Northern Ontario Dandelion Honey," and it sold readily. It was of a fine amber color, and had the true dandelion flavor. This left us the pure clover honey later, the clearest, most delicately flavored we have ever taken off. A traveler for one of the big wholesale houses in Toronto sampled it at one of the stores and wanted to corner our whole supply, saying it was the finest honey he had ever tasted. We took off only part of our honey as the rush of farm work was on, and, on going to take off more, got a big surprise. The bees had used all the uncapped honey and were busily uncapping more. The season had turned dry, and the supply of nectar had ceased.

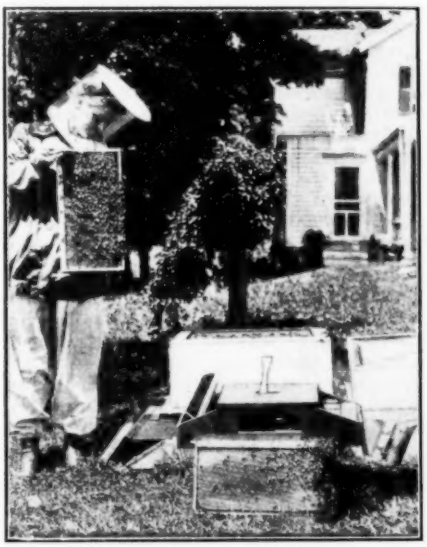
Thus far, beekeeping is not a popular industry here in the north. The sting is mightier than both honey and money; but, in spite of the past poor season, we believe beekeeping will pay even better in this new north than in old Ontario. We have a local market and get higher prices. No bee diseases, so far, have been known here. For our part, we are in it to stay, to grow, and to succeed.

Agnes Hunt.

Webbwood, Ontario.

Beekeeping for Pleasure and Profit. Helping the honey-bee help Hoover was one way of doing my bit during the World War. Owing to the great shortage of sugar, I decided to keep bees and started with one strong colony in the month of April.

As a side line nothing appeals to me more, and nothing could have given me



Miss Gertrude Terhune finds work with the bees extremely fascinating as well as profitable.

so much pleasure as my bees. It is a wonderful study and very fascinating work, indeed. I love every branch of it.

It is a profitable business as well, the season of 1921 being my record year. My best colony gave me exactly 228 pounds of very fine comb honey (in sections and chunk honey in shallow frames), besides having over 40 pounds left in the brood-chamber for winter stores.

In this part of New Jersey honey plants have been well protected by deep snow all winter, and we are looking forward to a bumper crop in 1923. In the northern part of the state we usually have a big fall honey flow from golden-rod and aster.

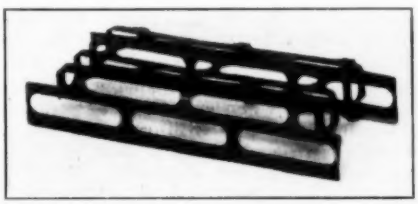
(Miss) Gertrude Terhune.
Newfoundland, N. J.

A Simple Method for Requeening. In the spring of 1922 I had in my yard several colonies of hybrids. They were quite cross. I tried an experiment in requeening two of them and was successful. I got the queens through the mail, and on their arrival, I took a 2-frame nucleus from each of the colonies and put it in an upper story with a wire screen between the two stories. I left the hybrid queen below and hung the cage with the new queen between the two combs in the upper story. I left the entrance for the nuclei closed two days, and then gave them an opening. Both the new queens were accepted. I left them until they had both combs filled with eggs and brood, then removed the hybrid queens and reversed the position of the stories, putting the nuclei below and the parent colony above, with a sheet of newspaper between. It made a smooth job, and the beauty of it was that there was no break in egg-laying during the process.

Homedale, Ida. A. N. Norton.

Perforated Zinc Cage for Caging Queen Within Hive. Those who practice caging queens to prevent swarming or for other reasons can make for this purpose a handy cage of perforated zinc to slip over the top-bar of a brood-frame. The general practice for comb honey is to give the queen the run of two hive bodies until the beginning of the honey flow, and then reduce to one when the sections are placed on the hives. Then cage the queen when queen-cells are found, at the same time destroying the queen-cells.

When the queen is caged in a wire-cloth cage the bees again build queen-cells during the time she is caged; but,



Cage to slip over top-bar of brood frame.

when caged in the perforated metal cage, no queen-cells are built during the caging period, for the bees have free access to her. She should be caged for about eight to ten days and then released. Before releasing it is well to look over the combs for any queen-cells that might have been overlooked, and destroy them; or, if one wishes, all the queens could be caged at once when the sections are put on, thus giving the queen a rest, and allowing a portion of the brood to emerge. When the cage is adjusted it is advisable to place ¼-inch strips on both sides to prevent its being crushed and injuring the queen. J. E. Thompson.

Medina, Ohio.

XUM

Hubam in South Dakota. I enclose a kodak view of a Hubam plant, measuring 7 feet 10 inches in height, that grew in my garden last year. I raised about 50 pounds of seed. This plant grew a few feet from the row,

Hubam grows tall in South Dakota. This stalk is 7 feet 10 inches high.

and came up late in the spring. It was just in bloom when cut, Oct. 8, the night preceding our first killing frost. Both stems shown on the barn door were on the same root, but one split off when cut. I. W. Cameron.

Davis, South Dakota.

Effect of Swarming Upon Disease. I do not know if attention has ever been called to the fact that the spread of bee diseases has gone hand in hand with our efforts to check or prevent swarming. While swarming is undoubtedly primarily a means of increase, is it not possible that it is, at the same time, Nature's means of battling disease? It must strike everybody that swarming leaves the old colony queenless and subsequently without young brood for a period sufficiently long to make the bees clean house before the advent of the new queen—closely resembling the treatment for European foul brood; while the swarm, seeking a new abode, gives itself the treatment for American foul brood. Might not the efforts to check swarming thus have contributed towards the sickening of the race?

I think it is quite common for beekeepers to have one breeding-queen, or to select one particular queen, the best, from which they raise all their queens, requeening their entire apiary with daughters of such a queen. While this will probably give splendid results in honey-gathering qualities, all the drones will later be interrelated and related to the queens with which they mate. This might again cause the offspring to be less resistant to disease, perhaps especially diseases of the young. Axel Holst.

St. Thomas, Virgin Islands.

Exterminating American Foul Brood. Jackson County, Iowa, has just organized a beekeepers' association especially for the purpose of exterminating American foul brood, which has broken out here. At first it was thought to be European foul brood and was carried through two apiaries by exchanging brood-combs. Beekeepers will now be educated to know the disease and to keep on the lookout in order to report whenever it shows up. Every colony will be treated as soon as the honey flow will warrant working with safety. The bees are largely in the hands of live members, which will go a long way toward the future prosperity of the business. It looks as though the yield from clover will be good in some places and poor in others. Clover never looked much better north of here, but toward the south it never looked much worse.

Maquoketa, Ia. F. Coverdale.

The Useless Consumers. I should like to see a discussion of the question of the most economical thing to do with a large population of field bees, in a location where virtually the only honey flow ends early in the summer. In my locality, the only dependable surplus is eucalyptus. The honey flow ends sharply, usually about the first of June. From then on till fall breeding-up in September, there is not much, if any, flow—sometimes just a slight maintenance flow. Would not the colony be better off without this large force of field bees? Migratory methods would, of course, be a solution; but, with a small apiary, that is impracticable. E. O. James.

Mills College, Cal.

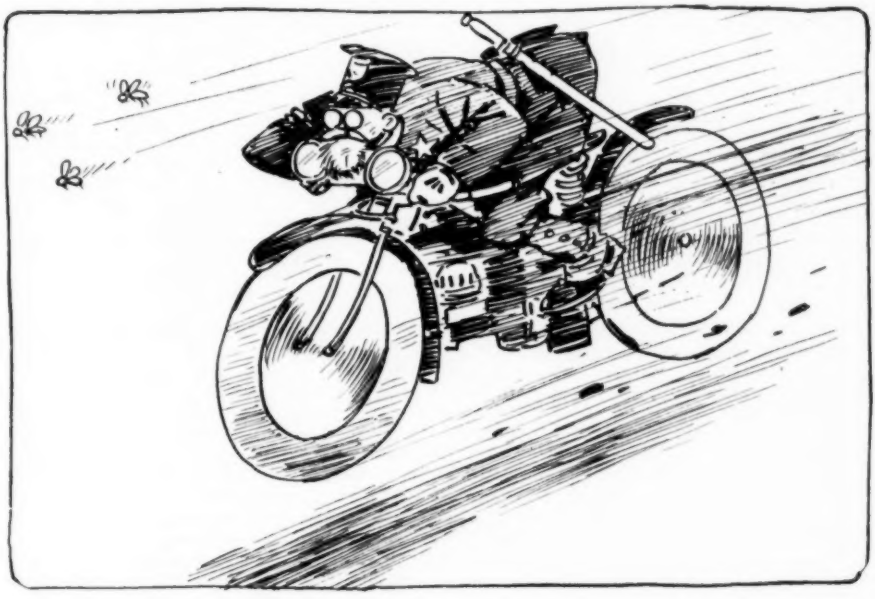
Selecting Best Stock for Comb Honey. It is interesting as well as profitable to number or mark all supers of comb honey as they are taken off, in order to know from which colony they were taken. It will often be found that sections from colonies of the same strength will vary greatly. From some colonies they may be well filled, capped white, not soiled to any degree, and not much propolized, while sections from others will show all the undesirable traits. The queens in colonies of the latter class should be promptly replaced by young queens from the best stock.

East Avon, N. Y. A. C. Gilbert.

SCIENCE VERSUS GUESSWORK

We don't believe in guesswork. We like to know exactly. So, in running an outyard, it is necessary to know whether it is cheaper to use up perfectly good gas that costs 23.1 cents per gallon to haul the bees to pasture or would it be more economical to have the bees carry it to us, using ?? amount of honey worth $2.40 per gallon. Before getting down to the oft-mentioned brass tacks, it was first necessary to find just how much honey to place in the space occupied by those question marks. In other words, how many miles can a bee make on a gallon? To ascertain this we had to use modern methods. By a secret method (we believe in secrets) we found out how long it took a bee to use up a drop of honey. To find the speed of a bee, it was next necessary to find out how far it could travel in a given time. So we went to the mayor of the city and said, "Mr. Mayor, will you please lend me your speed cop for half a day?" He replied, "Sure, have him to keep if you wish, for the only good he has ever done around here was to arrest a horse and buggy for overtime parking." So we went where the bees were flying and the speed cop trailed them, his speedometer registering 20 miles on some and 25 on others. He said, "Yes, some of them did exceed the speed limit; but, for political reasons, I thought best not to pinch any of them." We then found that a bee could make 20 miles on a drop and that there are 1400 drops to the gallon so that it could make 28,000 miles on a gallon, which would take it around the world, allowing for bad roads, detours, etc. We are going to put a new carburetor on the market, guaranteed to make 28,000 miles on a gallon, and name it "The Honeybee." If any one asks you why that name, tell them that it is because the one buying it will get stung. We now know which is cheaper, gas or honey, but that is another secret. Jay Smith.

Vincennes, Ind.



GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—Would it be well, when increase is not wanted, to unite any swarms that one might pick up with strong colonies that are working in the supers, by killing the queen, hiving the swarm in a standard hive body, and then uniting by the newspaper plan? Would one be apt to get too many bees in the hive that way?

Nebraska. Harold I. Perrin.

Answer.—If the colonies working in the supers are already strong, there is some question as to the advantage of adding more bees. While it is usually assumed that bees store honey in proportion to their numerical strength, this does not always follow unless great care is exercised in bringing about the proper distribution of the bees throughout the hive and the supers. Some think that there is a limit to the number of bees that can work advantageously in one hive. This limit is perhaps that of securing the right kind of distribution of the bees throughout the supers rather than simply because so many bees are in a single hive. If swarms are united with established colonies in this way, it will be well to unite them with colonies that are not already abundantly strong. To unite them with the strongest colonies might result in less energetic work and preparations for swarming.

Value of Queens Reared in Upper Story.

Question.—Are queens from cells built in an upper story, as in the Demaree plan, as good as those reared in the brood-chamber?

Wisconsin. Will Phalen.

Answer.—Queen-cells built in an upper story above a queen-excluder in a colony having a laying queen below the excluder are just as good as those built in the brood-chamber, provided the colony is abundantly strong. In fact, queen-cells built during the swarming season in the upper stories, when using the Demaree plan, are usually among the very best since they are reared under favorable conditions by strong colonies.

Swarming After the Honey Flow.

Question.—Are bees liable to swarm after the white clover honey flow if they have not swarmed previously? Unknown.

Ohio.

Answer.—Bees usually give up swarming as the close of the honey flow approaches. Colonies sometimes even destroy queen-cells after they have been started in preparation for swarming if the honey flow ceases abruptly, although occasionally a swarm will issue as the honey flow is closing. After-swarms may issue after the honey flow has closed. During a later honey flow, as from buckwheat or fall flowers, there may be a secondary swarming season, but the tendency to swarm at this time is not nearly so strong as it is in the spring. Colonies that are weak during the spring and early summer and reach their peak of strength at the beginning of the buckwheat honey flow are much more inclined to swarm than colonies that reach their maximum strength in the spring.

Giving Additional Supers.

Question.—If I remove the first super as soon as the bees fill it, will they stop working when I put on an empty one? How do you manage this? John C. Baughman.

Michigan.

Answer.—The only condition under which the first super should be left in place until finished without giving an additional super is when the season is such that the bees store only one super of honey. If the season is such that they will store more than one, the second super should be given long before the first one is finished. In fact, if the season promises well the second super should be given before the first one is half filled with honey. This gives the bees an opportunity to build comb and store raw nectar in the second super while the first is being ripened and sealed. In no case should a super of finished honey be removed and an empty one given, but the work should be bridged over from one super into the next no matter how many are completed. If the work is finished in one super before it is begun in another the incentive to work in the new super is greatly reduced, and a large part of the crop may be lost because the bees do not work with the proper spirit.

Congestion of Brood-Nest.

Question.—Now that we have been given the real cause of swarming, how can we tell surely when the brood-nest is congested with young bees? E. G. Draeger.

Iowa.

Answer.—Whenever brood-rearing is increased with great rapidity in the spring so that colonies have a large amount of sealed brood, we can be sure that the brood-nest will be congested with young bees when this sealed brood emerges. If brood-rearing is delayed in early spring by adverse weather and is then stimulated by favorable weather, together with considerable nectar from early flowers, there will follow a con-

gestion of young bees in the brood-nest. If there is a dearth of nectar at the time this congestion occurs, there should be no swarming; but, if the honey flow comes on at this time, swarming may be expected unless measures are taken to prevent it.

Detecting Brood Diseases.

Question.—How can one who has never seen foul brood detect it in the hive?

Tennessee. P. I. Pryor,

Answer.—If either of the brood diseases is in the vicinity it is well to form the habit of looking carefully at the combs of brood whenever the colony is examined for any purpose. In looking for American foul brood, look at the surface of the comb containing sealed brood. One of the first indications of this disease that will be noticed is an occasional sunken and discolored capping of sealed brood. On opening such cells a dead pupa will be found. Of course, larvae and pupae sometimes die from other causes; but, if any such cells should appear, one should at once suspect American foul brood. In later stages of the disease the sealed brood appears to be quite irregular, and the scales, which are the dried-down remains of the dead larvae, can be plainly seen on the lower cell wall when the top of the comb is tipped toward the observer so that a strong light shines down into the cells. In the case of European foul brood, instead of looking at the cappings of the sealed brood the observer looks at the unsealed brood. In this case he looks for discoloration of the larvae as they lie curled up on the base of the cell. The reason for looking at the cappings in case American foul brood is suspected is that in this disease most of the larvae die after the cell is sealed. In European foul brood most of the larvae die before the cell is sealed.

Hiving on Starters or Full Sheets of Foundation.

Question.—Should strong swarms be hived on starters or on full sheets of foundation? If there is a heavy honey flow, would it not be best to hive them on starters?

Tennessee. Hamilton Steele.

Answer.—The greatest objection to hiving swarms on narrow strips of foundation in the frames is the poor quality of combs built in this way. After the bees have built the equivalent of four or five standard frames of combs they usually begin drone-cells and fill the rest of the hive largely with drone comb. During a heavy honey flow there might be a slight advantage in super work immediately after the swarm is hived if starters only are used, because most of the honey would have to go into the supers and work in the brood-chamber would be carried on slowly. The advantage, if any, however, is slight and not sufficient to overcome the objection of drone combs in the brood-chamber. There may be a greater tendency for swarming out when full sheets of foundation are used, but this can be overcome by placing an empty hive body under the new brood-chamber when the swarm is hived, leaving it there about three days, and providing ample ventilation and shade.

Disease Transmitted by Swarms.

Question.—Is there any danger of a swarm, which issues from a colony having foul brood, carrying bee diseases to the new hive?

Ohio. Frank Murphy.

Answer.—Many instances have been reported of the disease appearing soon after a swarm was hived that came from a colony having American foul brood. In some of these cases, of course, the disease may have been carried in from some other source and not carried by the swarm; but the fact that bees take with them a large amount of honey when they swarm would increase the chance of some of this being stored and later fed to larvae over that which would have occurred if the bees had been shaken from their combs as in the ordinary treatment of American foul brood.

Feeding Back Extracted Honey to Produce Comb Honey.

Qustion—Is there any successful way to feed back extracted honey to have comb honey produced? There is no sale for extracted honey here.

Florida. C. C. Langston.

Answer.—Feeding back extracted honey to have it converted into comb honey is not, as a rule, advisable. Comb honey so produced is inferior in quality as to its flavor, and it also has a tendency to granulate early, thus making it necessary to dispose of it early in the season. Furthermore, to feed back successfully, every factor must be exactly right or there will be a great loss in the procedure. When conditions are just right it is possible for an expert to secure two pounds of comb honey for each three or four pounds of extracted honey fed, while if conditions are not exactly right the amount of comb honey secured is sometimes much less.

Twenty-five or thirty years ago many comb-honey producers practiced the feeding back of extracted honey to have unfinished sections completed at the close of the season. They figured with very good reason that sections of honey lacking only a couple of ounces from being filled could be profitably finished in this way, even though it required several pounds of extracted honey for every pound of increase in the weight of the comb honey. This practice has been largely abandoned as being unprofitable.

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JUST NEWS

Editors

BELOW is a program of the Beekeepers' Conference to be held at Madison, Wis., Aug. 13-18, when Wisconsin beekeepers will keep "open house" for beekeepers from other states as well as other countries. The special features of this conference are the dedication of the Miller Memorial Library at Madison and a pilgrimage to the home of Dr. Miller at Marengo, Ill.

Monday, August 13.—Registration; assignments of tents, rooms and announcements; address of welcome, E. A. Birge, president University of Wisconsin; response for beekeepers James Gwin, Gotham, Wis.; "Pollen," Dr. E. F. Phillips, Washington, D. C.; "Relation of Climate to Beekeeping in Wisconsin," L. P. Whitehead, University of Wisconsin.

Tuesday, August 14.—"Some Peculiar Habits of Bees," L. E. Noland, University of Wisconsin; "The Digestion of the Worker Bee," Dr. E. F. Phillips; "Division of Labor Among Bees," W. J. Nolan, Washington, D. C.; "Field Trips Made by Individual Bees," Geo. S. Demuth, Medina, Ohio; "The Temperature of the Beehive in Spring and Summer," V. G. Milum University of Wisconsin; "The Temperature of the Beehive in Winter," H. F. Wilson, University of Wisconsin; "Humidity in the Beehive," Dr. E. F. Phillips, Washington, D. C.; "Modification of Beekeeping Practices to Locality Differences," E. L. Sechrist, Washington, D. C.; "Instinctive Mechanisms of the Bees and Swarming Behavior," G. C. Matthews, University of Minnesota; swimming; movies (Auditorium, Agricultural Hall).

Wednesday, August 15.—"The Colors of American Honey," Dr. E. F. Phillips (Dr. Phillips is bringing with him 300 samples of honey from all sections of the U. S. for the purpose of determining and establishing a set of national color grades. Exhibition of samples and discussion); "The Colors of Wisconsin Honey and the Application of Our Grading Rules and Regulations," C. D. Adams, State Division of Markets; "The Cost of Honey Production," E. W. Atkins, Watertown, Wis.; "The Cost of Selling Honey Locally," H. W. Schaefer, Osseo, Wis.; F. J. Mongin, Green Bay, Wis.; Conrad Kruse, Loganville, Wisconsin; "Marketing Honey and Beeswax in Manufactured Products," E. R. Root, Medina, Ohio; "Problems That Confront Us Now," Francis Jager, University of Minnesota; "Advertising, Trade Names and Repeat Orders," John M. Kelley, Barnboo, Wisconsin; "Wisconsin Advertising and Selling Program," Miss Malitta D. Fischer, Madison, Wis.; "Value of Honey Exhibits at the State Fair," Jos. M. Barr, West Allis, Wis.; "Value of Honey Exhibits at the County Fair," L. C. Painter, Wausau, Wis.; "Roadside Selling, Honey Candy and Honey Sandwiches," E. R. Root; swimming; conference of Executive Committee, American Honey Producers' League; conference of Executive Commitee, Wisconsin State Beekeepers' Association; "What the League is Doing to Help American Beekeepers," general program, Dr. S. B. Fracker, Madison, Wisconsin; Legislative Aid, Colin P. Campbell, Grand Rapids, Mich.; "National Advertising," John M. Kelley; "What the Wisconsin State Beekeepers' Association is Doing to Help Wisconsin Beekeepers," general program, James Gwin; "Marketing of Honey," C. D. Adams; "Legislative," Dr. Robt. Siebecker; "What the County Association Can Do to Help Local Beekeepers," Trempealeau County, H. A. Schaefer, Osseo, Wis.; Dodge County, A. A. Brown, Juneau, Wis.; Outagamie County, Edw. Hassinger, Jr., Greenville, Wis.

Thursday, August 16.—"Diseases of Adult Bees," Dr. E. F. Phillips, Washington, D. C.; "The Causes of the Brood Diseases in Relation to Treatment," Dr. A. P. Sturtevant, Washington, D. C.; "Disinfectants for Foul Brood Diseases," H. F. Wilson; "Quarantine Regulations in Bee Disease Control Work," B. F. Kindig, Michigan State Department of Agriculture; "Are Area-Clean-Up Campaigns a Success?" Dr. S. B. Fracker; "The Scope of Beekeeping Extension Work," Geo. Rea, A. I. Root Company; "Extension Work in the Clover Lands of North Dakota," Dr. R. L. Webster, North Dakota Agricultural College, "Beekeeping Extension Problems of the East," N. E. Phillips, Pennsylvania Agricultural College; "Beekeeping Extension Problems of the South," E. C. Davis, Louisiana Agricultural College; "Beekeeping Extension Problems of the West," H. A. Scullen, Oregon Agricultural College; swimming; picnic, toastmaster, K. L. Hatch, Director of Extension, University of Wisconsin.

Friday, August 17.—Dedication of the Dr. Miller Memorial Apicultural Library; report of the Library Committee; official acceptance of the Library, E. A. Birge; "Beekeepers' Memorial Gallery, H. F. Wilson; "Dr. Miller's Influence on Beekeeping in Europe," Francis Jager; "Dr. Miller at Home," N. E. France, Plattsville, Wis.; "Adam Grim and Early Wisconsin Beekeeping," George H. Grim, Jefferson, Wis.; "American Beekeeping," Geo. S. Demuth.; "Canadian Beekeeping," F. Eric Millen, Ontario Agricultural College; "European Beekeeping," Alois Alphonsus, Austrian Department of Agriculture; swimming; 'Stray Straws," led by Kennith Hawkins, Watertown, Wis.; reading of letters from Dr. Miller's friends.

Saturday, August 18.—Pilgrimage by auto to home of Dr. Miller, Marengo, Ill.; basket lunch at Marengo; memorial services and unveiling of tablet; informal reception at the former home of Dr. Miller.

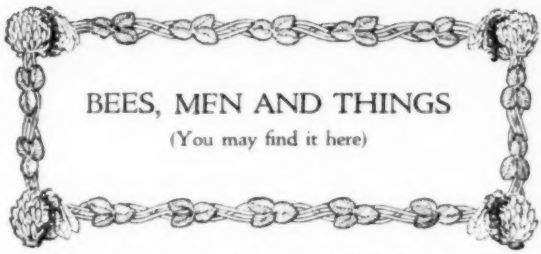
* * *

In our "Who's Who" page, published in May, the state of Minnesota was omitted on account of data from this state having been lost in the mails. Beekeeping is taught in the University of Minnesota, this work being in charge of Prof. Francis Jager. Charles D. Blaker, 4420 Grimes Ave., Minneapolis, Minn., is the state bee inspector, and G. C. Matthews is the secretary of the state beekeepers' association.

* * *

Prof. H. F. Wilson, Madison, Wisconsin, president of the American Honey Producers' League, is calling for a conference of queen-breeders and shippers of package bees, the preliminary meeting to be held at the Beekeepers' Chautauqua, Madison, Wisconsin, August 13 to 18. Queen-breeders and producers of package bees interested in such a movement should communicate with Prof. Wilson.

(Continued on page 492.)



IN introducing queens, all the bee books speak of the queens' acquiring the hive odor. I believe that it is just the opposite, the colony acquiring or getting accustomed to the odor of the new queen."—Axel Holst, Virgin Islands.

"A good fly-paper holder can be made of cardboard. Cut a piece of heavy cardboard, or two or more thin sheets 8 by 14 inches. Place a sheet of Tanglefoot on the cardboard, fasten the four corners with wire paper clips. A half-inch elevation in the center of the sheet increases the catch of flies. Bend up a piece ½ by 6 inches in the center of cardboard lengthwise."—Mrs. Jane Prentice, Delaware County, Indiana.

"Prospects for a honey crop here are the poorest I ever saw. Clover is very scarce, and colonies are only fair as to strength. At this writing, June 12, the bees are doing nothing, and many colonies are on the verge of starvation."—J. Harley Walker, Cass County, Indiana.

"I was 'listening in' to the fine program broadcasted from Station W-A-O-W last Saturday evening, June 9, and you can well imagine my happy surprise when the announcer suddenly said, 'You will now listen to Mr. E. R. Root of The A. I. Root Company, Medina, Ohio, who will give a talk on bees and honey, that ought to be very sweet.' It was indeed a pleasure to hear Mr. Root talk, and I felt like having met and heard an old acquaintance. It would be interesting to know how many readers of Gleanings were among Mr. Root's invisible audience that night."—G. Herman Peterson, Crow Wing County, Minn.

"Crimson clover is getting to be quite an important plant in the central part of Tennessee, as the acreage is increasing with each season. The yield from this clover is heavy, and the quality of the honey is equal to white clover. It is sown largely as a cover crop and for winter pasturage, though in some counties large quantities of seed are harvested."—J. M. Buchanan, Williamson County, Tennessee.

"I find it surely pays to leave plenty of stores with the bees for winter. Then one can take the surplus in the spring. I left about 40 pounds of honey with each colony."—A. D. Browning, Ottawa County, Oklahoma.

"All beekeepers buying pound packages should weigh the bees as soon as they arrive. Last spring I weighed a number of three-pound packages, then deducted the weight of the cages and found not one of the cages contained two pounds of bees including the dead ones."—Eugene Stech, Cook County, Ill.

"Why not put only light-colored honey in the red lithographed pails and put all amber honey in blue lithographed pails?"—Nic Klein, Blackhawk County, Iowa.

"The bees are not doing any good here, but they may have done fairly well at Memerambi. The packet of sweet clover seed that I received from you has done well, and I keep on increasing it."—J. Graham, Mt. Lamson, Queensland, Aus.

"I do not see why experienced beekeepers don't come up here and start beekeeping together with other farming. Clover grows wild here, and there are large areas of it. There are not many bees kept here."—Nils P. Johnson, Douglas County, Wisconsin.

"We tried Mr. Sams' method of catching a black queen, as described on page 320 of the May issue of Gleanings, on a strong colony. The first time we found her she flew away and went into the hive at the entrance. We waited about half an hour and tried again, when we caught her. The colony was about ready to swarm. That surely is a good way to catch black queens."—M. N. Wheatley & Son, Sevier County, Arkansas.

"Is there a record of the lowest temperature at which bees carried nectar and pollen during most of the day? My reason for asking this question is that at 11 a. m. on April 7 my bees began work when the temperature was 38 degrees in the shade. The temperature in the sun did not rise above 52 all day.—John M. Smith, British Columbia.

"I find quite a variation in the spacing of combs in the same hive when built naturally; but the combs first started are started for the purpose of brood-rearing, and, later on, storage combs are started which vary in the distances they are spaced. In our measurements we ought to confine ourselves to the brood-combs. When brood-combs are spaced 1½ inches on centers, this spacing permits two bees to pass on opposite combs back to back."—T. K. Massie, Mercer County, West Virginia.

TALKS TO BEGINNERS

Geo. S. Demuth

THE month of July brings the close of the main honey flow throughout the greater portion of the United States. There is as much variation in the actual time of the closing of the honey flow as there is in its beginning. If the season is hot and dry the honey flow is usually short, and its close comes early. Sometimes the season is greatly prolonged by timely rains, which revive the plants and cause them to continue blooming.

If one could know definitely the time the honey flow would close, the management would be greatly simplified; but, as it is, it is necessary to be alert in order to anticipate, if possible, the close of the honey flow. Sometimes the honey flow tapers off toward the end, giving the beekeeper an opportunity to arrange his supers so that there will not be a lot of unfinished work, but at other times the honey flow closes so abruptly that there is considerable unfinished work.

Management of Supers During Latter Part of Honey Flow.

While super room is given in advance of the needs of the bees during the early part of the honey flow, it should be given more sparingly as soon as there are indications that the honey flow is approaching the close. When comb-honey supers are tiered up as described last month, it is well to have the first super given or the one which is nearest completion not more than one super removed from the brood-chamber. In other words, when the honey flow is good and the empty super is placed beneath the partly filled one it is well to put the one nearest finished immediately on top of the empty one just given, with the others arranged above, the one in which the least work has been done being placed on top.

In the case of extracted honey it does not matter so much if the supers are not completely finished at the close of the season, but even in extracted honey it is well to have the super work concentrated toward the close of the season. It would be better, for instance, to have two supers practically filled with honey to extract than to have the same amount of honey scattered through three or four supers.

At the first indication that the season is closing the supers should be rearranged. If an empty super has recently been given between the brood-chamber and the partly-filled supers above, it should be taken out and the other supers arranged so that the work will be concentrated on the supers that are nearest complete.

In the case of comb honey any supers that are nearly finished should be taken off so that the number of supers left on the hive will be reduced to one or two if possible. It does not pay to leave supers of comb honey on the hive until every section is finished and sealed, for sometimes sections in the middle of the super would become soiled before the ones in the corners are sealed. When the supers are taken off, the unfinished sections should be sorted out and put back to be finished. If a whole super of unfinished sections is assembled in this way, those nearest finished should be placed in the middle of the super and those in which the least work has been done should be placed on the outside in order to induce the bees to finish those in the middle more promptly.

In the case of extracted honey it is not necessary to take off any of the honey until the season actually closes, for in this case it does not matter if the cappings are somewhat travel-stained. In case one runs out of extracting-supers, four or five combs of honey that are mostly sealed can be taken from the middle of the supers and extracted. If the season is nearing its close, the combs of unfinished honey can then be put into the middle of the super and the empty combs that have been extracted placed at the sides.

In rearranging the supers in either comb honey or extracted honey production at the close of the season, the important thing to remember is that the combs nearest completed should be in the middle of the super adjacent to the brood-chamber. The unfinished work should be at the side of the super and in the super above. When comb-honey supers are arranged in this way the bees sometimes remove some of the unsealed honey from the upper super and place it in the lower one, thus finishing the unfinished work. It is according to the instinct of the bees to put the honey immediately above the brood, and at the close of the season the unsealed honey from more remote parts is moved in toward the brood.

Some Indications of the Closing of the Honey Flow.

Sometimes the first indication of the

approaching close of the honey flow noticed by the beekeeper is the tendency of the bees to begin storing more honey in the brood-chamber, thus crowding the brood-nest. This is sometimes noticed before the bloom of nectar-bearing plants shows signs of failure. As the close of the honey flow approaches, the workers sometimes begin to crowd the drones down on the floor of the hive and out of the entrance. Occasionally a worker will be seen struggling with a drone, apparently trying to lead him out of the hive. Another indication of the approaching close of the season is increasing amounts of propolis (the gummy substance which the bees place in cracks and crevices about the hives). Often the bees will begin to varnish over the new white cappings of the combs with propolis, giving it a peculiar dirty appearance. Still another indication of the approaching close of the honey flow is the increased tendency to sting. During a good honey flow earlier in the season the bees pay but little attention to the operator; but, as the close of the season approaches, more care is necessary in handling them.

As the supply of nectar diminishes there will be an increasing tendency of the bees to rob. Sometimes several days or even a week before the honey flow closes robbers become quite troublesome, and, if a hive is open for even a couple of minutes, bees from neighboring colonies may have time to steal some of the honey. After they once get a taste of stolen honey, they may come back in great numbers after more. If these robbers are able to get into the hive in great numbers, they are sometimes able to overpower a colony that is not abundantly strong and carry away its honey. In the meantime the bees become quite cross. At such times the hives should not be opened unless necessary, and great care should be taken to prevent robbers from getting a taste.

The beekeeper located in a village or town should be exceedingly careful when taking off honey not to expose any where robbers can get at it, for there is great danger of starting a rampage of robbing and stinging that may cause trouble among the neighbors. Trouble of this kind can be easily avoided by proper handling of the bees; but, unfortunately, many beginners have to pass through an ordeal of this kind before they fully realize how much trouble can come from a little careless exposure of honey during a dearth of nectar.

How to Prevent Robbing.

If robbers are about, little groups of bees may be seen trying to get into the cracks of the hive between the supers, or around the edge of the cover if the hive has just been opened so that the propolis used in sealing these cracks is broken. This is always a danger signal, for bees do not do this except when trying to rob. When this happens it is time to quit working with the bees unless absolutely necessary.

By opening the hive and smoking the bees the defense of the colony is disorganized so that after the hive is closed some robbers may be able to slip between the guards at the entrance. If they begin doing this, a great commotion will be seen at the entrance and usually bees will be seen fighting. Sometimes hundreds of bees are killed at the entrance before the robbers give up. One can tell the robbers by their peculiar behavior as they try to elude the guards at the entrance and slip into the hive. They do not alight as the inmates of the hive, but dart about in a nervous manner before alighting.

If the colony fails in its defense, the robbers will enter the hive more boldly and rapidly carry away the honey. In carrying loads of honey from the hive the robbers can easily be distinguished from the inmates of the hive by their manner of flight. They attempt to carry such large loads that they have difficulty in taking wing. Usually they run upward from the entrance on the front of the hive before attempting to take wing.

Sometimes the commotion of robbing is confused with that of the playflight of young bees. This playflight usually takes place early in the afternoon when a large number of bees will be seen in the air near the entrance of the hive. These young bees can be distinguished from robbers by their brighter appearance as well as by their behavior in flight, the robbers being more nervous in their flight than young bees. Robbing can also be distinguished from ordinary flight by the higher pitch of the humming.

Taking Off Finished Honey.

While the finished honey can be taken off without the use of the bee-escape, it is more difficult to do this at the close of the season. This little device, when placed in the escape-board and the escape-board slipped under the super to be taken off, clears the supers of bees in 12 to 24 hours. In this way honey can be removed without the bees' becoming excited, and, best of all, the supers of honey can be carried into the house without taking along a lot of bees as is the case when honey is taken off without the escape. The bee-escape is almost a necessity at the close of the season, especially if the bees are kept near neighboring houses, and is a great convenience in removing honey at any time.

To take off supers of honey to be ex-

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tracted without the bee-escape, the cover should be removed and the bees quickly driven down by smoke. The combs should then be taken out one at a time, the bees brushed off and the combs of honey set into an empty super. This super should be kept covered if robbers are troublesome.

To take off supers of comb honey without the bee-escape, the bees should be driven down out of the sections by blowing smoke into every opening at the top. It is important to start the bees down with smoke before any of them get their heads into cells to take honey, for, after they have their heads in the cells, smoke does not seem to affect them. They should be started downward quickly and kept on the go until they are out of the super. As soon as most of the bees have been driven down, one end of the super should be lifted quickly while the other end rests on the hive, and while in this position the bees should be brushed from the bottom of the super. The super of honey can then be taken inside and placed before a window so that the remaining bees will leave it and fly to the window. Later, the window should be opened to permit these bees to escape but not left open for long since the bees from the hive might find the honey and begin to rob it out.

As soon as the honey flow ceases or, better still, just a little before, all comb-honey supers should be taken off, for if they are left on the hive the bees will gnaw the foundation and propolize the sections and the combs. Unfinished sections that are nearly completed can be used at home, and those which have but little honey can be used later to feed back to the bees. Even if there is a later honey flow in August and September, the comb-honey supers should be taken off during the dearth of nectar, and they should not be put back on the hives until the bees are getting enough nectar to cause them again to build comb.

Extracted honey can be left on the hive even for two or three weeks after the close of the honey flow, provided the bees do not gather some inferior honey which would be mixed with the better honey from the early honey flow. In any event the early-gathered honey should be taken off and extracted before any of the late honey is stored in the super.

It must be remembered in taking off extracting-supers that usually there is not much honey left in the brood-chamber when empty combs are given in the supers. For this reason it is best to leave one super on the hive to be sure the bees shall have enough for their own use. In localities where there is no fall honey flow it is well to leave either a shallow extracting-super (food chamber) entirely filled with early-gathered honey, or a full-depth extracting-super nearly filled with early-gathered honey so that the bees shall have enough not only for late summer and fall but for winter and spring use. If every beekeeper in localities not having a dependable fall honey flow could be induced to do this, the honey crop next year would be tremendously increased. In some localities there is almost no honey left in the brood-chamber at the close of the honey flow when extracted honey is being produced, no matter how large the brood-chamber is. It is here that many beginners, as well as some older beekeepers, fail in their management without knowing the reason for their failure.

An Inexpensive Extracting Outfit.

The beginner's extracting outfit need not be an elaborate affair. Aside from a small extractor and an uncapping-knife, the extracting outfit can be made from material already at hand. A box with a wire-cloth bottom, set over a tub or large pan, makes a good receptacle for the cappings as they are sliced from the combs; and a barrel, with a piece of cheese-cloth tied over the top so it will sag down enough to hold a pail of honey, makes a good straining tank. After the extracting is done, the extractor can be washed and the honey from the barrel poured back into the extractor, which now becomes a honey tank from which the honey can be drawn through the honey gate into containers for market. Of course, such an outfit would not be suitable for more than a few colonies.

Requeening in July.

Just before the close of the honey flow is a good time to replace any old or inferior queens. It is much easier to introduce queens while there is still honey coming in than after the honey flow is over. Young queens introduced in July lay more eggs during late summer and autumn than old queens, and therefore such colonies are built up to greater strength for winter. The beginner who got his start in bees by transferring colonies from box hives or gums should now requeen his colonies with young Italian queens from some reputable breeder, for usually the stock obtained in box hives or gums is inferior. On account of the danger from European foul brood, it is not safe to keep black bees if this disease is anywhere near. Good stock in bees is as important as improved live stock of any kind. In introducing queens to requeen colonies, the directions which come with the queen should be carefully followed.

A. I. Root's Story of His Own Life

. . . and by it he, being dead, yet speaketh.—Hebrews 11:4.

NEARLY 80 years ago I was born in a log cabin two miles north of Medina. My mother used to say that I was always curious about everything that was going on, even in my infancy. As soon as I could talk I asked more questions in an hour than our family and all the neighbors could answer in a week. When I could get outdoors I was still more curious and inquiring. The older children had much to say about the town of Medina and its people, and I teased so much to go that when I was four years old I was permitted to go to town with father in a big double wagon. It was all woods then on both sides of the road. I especially remember the boxes of honey that were in that lumber wagon. Father was a carpenter and had made some very neat boxes of thin lumber. When we reached town, I remember how quickly the crowd that gathered around bought all of this nice honey so attractively put up.

When I was old enough I wanted some bees of my own, but father always declared they did not pay for the fuss and bother—besides, they would sting.

My mother said I always found something to interest me and something to enjoy. I never came to her saying, "Mother, tell me what I can do." I remember vividly when I began to notice the multitude of wonderful things there are in this world. When quite a child I became interested in seeing the ants work, building their hills, and whenever I had leisure I enjoyed myself in studying their movements. The sight of the growing grass, the budding branches and all these things were an increasing delight; and when I discovered it was my privilege to have a hand in the great machinery of life it was a new delight.

My first business in the way of earning money was in keeping poultry. After I got two biddies of my own to care for and study, from that time, I think I may say, I have never been out of employment. I began studying the wants of my two hens much as the experiment stations carry on their work nowadays, and I quickly began to note the effect of certain kinds of food in regard to the production of eggs. To get a book on poultry I walked eight miles to the bookstore, and, on the way home, I sat down so often to study that wonderful book that I came near not getting home that same day. I scanned the Rural New-Yorker then taken by my grandfather, and I looked over other papers as well to find items on poultry. From these sources, I learned to pound up bones with a hammer, and also to get butternuts in a little wagon, and then pound them up much as we did the bones for the chickens.

It was July 4, 1852, when I was twelve years old, that the locomotive first reached our neighboring town of Akron. In spite of my curiosity I was in such a state of excitement that, when the engine came rushing up, I pulled away from my father and "started for the woods" at such a rate that it was about all he could do to catch up with me and bring me back. In a little time my brother and I undertook to build a steam engine; and by the help of an old kettle with a wooden cover on top we actually produced a machine that would run by steam.

The Maple Sugar Bush.

When I was 10 to 12 years old my father rented a pasture lot that contained a piece of woodland. There being 30 or 40 maples in it, I begged the privilege of using the trees for a sugar camp, and was given a kettle, some tin pails, a sharp little axe, and told to go ahead. I want to tell you that one of the happiest days of my childhood was when I made sugar in the woods just below that Mogadore home. The rest of our family of seven were pretty sure to go down to the sugar camp when "sugaring off" time came. Under my good mother's directions, I was careful of my utensils, and produced the nicest maple sugar, stirred off white and dry. No wonder, friends all around became fascinated by this springtime industry. Throughout all my life, when springtime comes, I long to get out to the sugar camps and taste the delicious maple syrup once more. During those boyhood days we used to hunt up a little snow, if we could find it in some drift, that had not entirely melted, and drop the hot sugar on it so as to make ice-cold maple wax. The world may talk about ice-cold lemonade and various kinds of ice cream, but, to my notion, nothing equals new maple sugar.

XUM

My First Interests.

On Saturdays I used to ride a horse all day to cultivate corn. For this I received 25 cents, which was only 2½ cents an hour, but when night came I was as much delighted with my "two-shilling piece" as you can well imagine. I did not find riding a horse to be drudgery, for the man who employed me was a good, kind friend, and at that time my good father and mother were finding it uphill work to feed and clothe a family of seven children. I can now fervently thank God that conditions were such in my childhood that I had to work thus, even at small pay. Had not my parents been comparatively poor people, I fear I never should have learned to love gardening and chickens all through my life.

But, before long, I began to hate farm work and think that if I could only have a shop and stay indoors all day where it was warm, and work with tools, I should be perfectly happy. Well, I went to work in a shop and did enjoy working with tools, and especially did I enjoy it when I had a shop and tools of my own. As the years passed, however, and I began to feel the need of outdoor air and sunshine, I used to look back sometimes to those days on the farm and think that farm life was not, after all, the worst life in the world. I presume one reason why I did not like farm life when a boy was because I was not very strong, and most work on the farm required strength. I remember father once said I was not worth 25c a day to work in the harvest fields, and I guess he was right.

About that time my mother remarked one day that, as I was not worth much in the harvest field, why not let me help her in the garden. Father assented; and when fall came we figured up the proceeds of the garden, and he said he guessed, after all, I had been the most profitable hand on the farm. Mother had faith in me always.

About as soon as I was old enough to read anything concerning the wonders of the unsealed world, which microscopes were said to reveal, I became almost crazy on the subject. I began my first investigation with some of my grandmother's spectacle lenses, and when a little older I saved my pennies until I was able to purchase a sun glass. This, of course, did not reveal very much; but, when I afterwards got a small magnifying glass for about half a dollar, I was quite happy with it for many days. However, it was not until I was old enough to teach school that I scraped together money enough to purchase a real compound achromatic microscope, and you may be sure that my pupils that winter received some lessons not commonly taught in country schools.

The Awkward Days.

As a boy I was very bashful and awkward, and it seemed to me that I was always making some kind of blunder. If I went to a hotel I was afraid that I would not do things just as other folks did. If some one laughed at me because I was not posted in the general usages of society, the matter used to weigh on my sensitive spirit to such an extent that I could hardly sleep the following night.

Once when I went to pay my bill at a hotel where I was staying, I offered the money to the hostler. Some one standing near laughed at me and told me to go to the landlord. Frightened almost out of my wits at the awful blunder I had made, I went to the landlord, who, seeing how excessively rustic I was in my ways and manners, charged me at least double the usual price. My brother censured me for paying such an exorbitant bill, then told some friends about my going to the hostler, and altogether I was just about as miserable as I could well be. I declared mentally that I would go away off into the woods and live alone where none could laugh and jeer at my unfortunate mishaps. A kind friend told me it was no matter at all, and that any one might have made the same mistake. How my childish heart clung to him!

Almost every summer day I used to go in bathing, but although we had beautiful ponds of clear soft water with gravelly bottoms to walk on, I could not learn to swim. The rest of the boys who swam told me how and tried in vain to get me to do as they did and trust to the water to bear me up; but summer after summer passed in the same way, and I could not muster up courage to take my feet off the bottom and launch out as they did. I would almost do it; but, unless I could have at least one toe on the ground, I was afraid I would sink. Finally one day I was persuaded so much that I said, "All right, I will sink then." Raising both feet clear from the bottom, I pushed out boldly, and, to my great surprise and astonishment, did not sink at all, but in almost one minute I sailed off. I simply trusted the water.

[This, the first installment of A. I. Root's autobiography, introduces a remarkable and inspiring story of a remarkable life. A. I. Root's department in this journal will, therefore, be continued for some time. It was prepared by A. I. Root for publication after his death in order to prolong his usefulness, and thus enable him more completely to fulfill his life mission.—Editor.]

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line, 8 words to the line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors. For special conditions on bee and queen advertising, please write us. Copy should be received by 15th of preceding month to insure insertion. Cash with copy, if credit has not been established previously.

REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

J. Tom White, W. B. Wallin, John St. Romain, W. M. Peacock, J. N. Harris, J. E. Harris, C. M. Elfer, A. E. Crandall, F. D. Bowers, J. Ivan Banks, American Bee Journal, Allenville Apiaries, C. F. Alexander, Eastern Label Co., E. F. Quigley & Sons, W. H. Laws, J. M. Cutts & Son.

HONEY AND WAX FOR SALE.

FOR SALE—White clover honey in 60-lb. cans—none finer. J. F. Moore, Tiffin, Ohio.

CHOICE white clover extracted honey in new 60-lb. cans. Sample 10c. D. R. Townsend, Northstar, Mich.

FOR SALE—Comb and extracted white clover honey. Prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—Clover, amber and buckwheat honey in 5-lb. pails and 60-lb. cans. C. J. Baldridge, Homestead Farm, Kendaia, N. Y.

FOR SALE—Clover honey in 60-lb. cans or 5-lb. pails. Write for prices stating quantity desired. Sample 10c. Wm. F. Vollmer, Akron, N. Y.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and prices on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—New sweet and white clover honey in new 60-lb. cans, 10½c; in used cans, 10c per lb. This honey is guaranteed to be as good as any in U. S. in color, body and flavor. Virgil Weaver, Moville, Iowa.

HONEY FOR SALE—In 60-lb. tins; water white orange, 15c; white sage, 13c; extra-light amber sage, 11c; white clover, 13c; buckwheat, 10c; star thistle, 14c; for immediate shipment from New York. Hoffman & Hauck, Woodhaven, N. Y.

FOR SALE—30,000 lbs. of white clover honey (not sweet clover) in new 60-lb. cans, two in case, at 12½c per lb., in 5-lb. pails, 12 in case at 80c per pail. $75.00 per 100, f. o. b. Waterville. Sample, 15c. No better honey on the market. F. W. Summerfield, Waterville, Ohio.

RASPBERRY HONEY for sale. Left on the hives until thoroughly ripened by the bees. It is thick, heavy body, rich and delicious. Put up in 60-lb. cans, two cans to case for $15.00, and one for $8.00. Sample by mail for 20c, which may be applied on purchase. Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE—90 cases, 60-lb. cans, two in a case, 70c per case. Honey was liquefied with dry heat, leaving the cans in extra-fine condition. Also 80 full-depth 10-frame extracting-supers with plain frames, nailed but not painted. All brand-new. Lewis make. $1.00 each. John C. Bull, Valparaiso, Indiana.

OUR new crop of white clover extracted honey will be extracted and ready for the market the last of this month (July). We are making a special effort to produce our 1923 crop of extracted honey, just a little better than usual, which means that if you buy Townsend's quality of extracted honey you will get the very best that money can buy at any price. We get just a little more than market price of "Townsend Quality" extracted honey, put put up in new cans and cases, so if you are looking for the cheapest honey you can buy, kindly do not write us; but, on the other hand, if you have customers who appreciate a good article and are willing to pay just a little more than market price for good goods, write us, saying how much honey you can handle this year and we will quote you our very best price on the quantity wanted. E. D. Townsend & Sons, Northstar, Michigan.

HONEY AND WAX WANTED.

WANTED—Honey in ton lots, comb and extracted of all kinds, and maple syrup. Joe Mlinarits, 8931 Keller St., Detroit, Mich.

WANTED—Michigan and Ohio white comb honey. Cash, trade or commission. E. W. Peirce, 709 Shelby St., Zanesville, Ohio.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade price, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

OLD COMBS WANTED—Our steam wax presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1923 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

WANTED—Beeswax. We will pay you the best market price in cash or exchange your beeswax for the famous AIRCO foundation for a very reasonable charge. Ship direct to us in double burlap sacks, marking each package plainly wtih your name and address on the inside and outside so we can identify the shipment and make prompt remittance. The A. I. Root Company, Medina, Ohio.

FOR SALE.

ROOT bee supplies and AIRCO foundation for 1923. A. V. Small, successor to C. F. Buck, Augusta, Kans.

20 8-fr. double-walled, packed bottom hives at $2.00 each, or $35.00 for the lot. Irvin R. Van Devier, Medina, Ohio.

FOR SALE—Honey cans used only once, 2 60-lb. cans to the case, 60c. Joe Mlinarits, 8931 Keller St., Detroit, Mich.

XUM

FOR SALE—40 ten-frame empty beehives. Wm. Stendel, 11115 Edbrooke Ave., Chicago, Ill.

FOR SALE—New 160-lb. honey kegs at $1.12 each f. o. b. N. L. Stevens, Venice Center, N. Y.

CONNECTICUT and Rhode Island headquarters for Root's beekeepers' supplies. A. W. Yates, Hartford, Conn.

FOR SALE—Ranch, eight-room house, fine location. Apiary and supplies. New oil county. E. T. Israel, Kirtland, N. Mex.

FOR SALE—200 used standard hives, 8 and 10 fr.; 8-fr. Ideal supers, in lots of 10 or all. Selling out, going south. Box No. 33, Waltham, Mass.

BARGAIN—Large quantity of used 8 and 10 frame hives and extracting supers with drawn combs on full sheets and wired. H. S. Wintermute, Vestal, N. Y.

THEY have sold honey for us and they will for you. Send 16c in stamps for sample of our "Castone Container." G. H. Price, Newark, N. Y.

FOR SALE—Good second-hand 60-lb. cans, two cans to case boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—About 100 regular 8-fr. comb-honey supers with some fixtures. Nailed and some in original packages, 35c per super for the lot. J. D. Beals, Oto, Iowa.

ROBINSON'S comb foundation will please the bees, and the price will please the beekeeper. Wax worked at lowest rates. E. S. Robinson, Mayville, Chau. Co., N. Y.

FOR SALE—Second-hand eight and ten-frame hives, supers, Cowan extractor, excluders, escape-boards, feeders and other goods. W. Rauschenberg, 4818 Menard Ave., Chicago, Ill.

HONEY-NUT CHOCOLATES. A new and delicious confection made of pure honey, nuts, fruits, etc. $1.00 lb., 50c ½ lb., postpaid. Wholesale prices on application. J. D. Kroha, 87 North St., Danbury, Conn.

FOR SALE—Have other market for all poor cans and offer only good second-hand five-gallon cans. Price, $6.50 per 10 cases, or $15.00 per 25 cases. Order now. A. I. Root Co., 224 W. Huron St., Chicago, Ill.

FOR SALE—60 shallow supers (Root make) 8-fr., new, never used, will take 4 x 5, 3⅝ x 5 or 4¼ x 4¾ in. sections or shallow (5⅜-in.) extracting frames, at 50c each in lots of five, special price on lot. Want a Barnes saw. Nic Klein, Hudson, Iowa.

ANY beekeeper wishing to buy a place in a good clover basswood location, 10-frame factory supplies for 300 swarms, 50 swarms of bees, guaranteed free from disease. Write for particulars. A bargain. C. D. Townsend, R. F. D. No. 2, St. Johns, Mich.

FOR SALE—A. I. Root's winter home in Bradentown, Florida, including a two-story six-room dwelling-house, sheds, tools, etc. Also two electric windmills suitable for lighting the house. Five acres of land abutting the canal. Admirably suited for truck gardening or poultry raising. Address H. H. Root, Trustee, A. I. Root Estate, Medina, Ohio.

FOR SALE—Hives, 8 or 10 frames, with frames, $2.50 each; extracting supers with frames, $1.00; supers for comb honey, complete, $1.00; extractor, $12.00; 60-gal. honey tank, new, $10.00; 5-gal. cans, new, 2 for 90c; wood-and-wire queen-excluders, 40c; wire traps, 35c. The above are all Root goods, nicely painted and in good condition. 100 home-made hives with frames, $1.00 each. Everything in the bee business, used at half price. All above are regular sizes. Charles Hamel, North Adams, Mass.

A UNIQUE BOOK.—Friend and admirers of the late A. I. Root can yet obtain a copy of one of his earliest and most characteristic books, "Merrybanks and His Neighbors." There are only 400 copies left today. These should find their way to the libraries of friends of the great beemaster who may not have a copy. A. I. Root never wrote anything more characteristic than these "pictures from real life of a beekeeper." While the 400 remaining copies last, only 15c each postpaid. Address The A. I. Root Company, West Side Station, Medina, Ohio.

BEES AND QUEENS.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

WHEN IT'S GOLDEN, IT'S PHELPS.—C. W. Phelps & Son, Binghamton, N. Y.

INSURE a honey crop. Buy SIMMONS QUEENS and NUCLEI. Fairmount Apiary, Livingston, N. Y.

ITALIAN QUEENS. Untested, $1.25; tested, $2.00. After June 1, J. D. Kroha, 87 North St., Danbury, Conn.

THREE-BANDED queens, $1.00 each; $85.00 per 100. Bees in any way desired. Walker & Shaner, Scotts Sta., Ala.

BRIGHT Italian queens, $1.00 each; $11.00 per doz. Send us your orders. Graydon Bros., R. F. D. 4, Greenville, Ala.

BRIGHT Italian queens, 1, $1.00; 12, $10. No disease, safe arrival guaranteed. T. J. Talley, R. F. D. No. 4, Greenville, Ala.

THREE-BANDED and golden queens. Finest select Italians. 1 queen, 75c; 6, $4.50; 12, $8.00. G. H. Merrill, Greenville, S. C.

HIGH-GRADE ITALIAN QUEENS, $1.00 each, $10.00 per doz. No disease and satisfaction guaranteed. J. J. Scott, Crowville, La.

MY five-banded Golden queens will be ready April 1. 1 queen, $1.00; 6 queens, $5.50; 12 queens, $10.00. W. W. Talley, Greenville, R. D. No. 4, Ala.

SHE-SUITS-ME QUEENS, 1923, after June 1, $1.50 each. One dollar per queen when ordered four weeks or more in advance. Allen Latham, Norwichtown, Conn.

THREE-BANDED Italian queens. Select untested, $1.00 each; $10.00 per dozen. No disease. Satisfaction guaranteed. W. T. Perdue & Sons, Fort Deposit, Ala.

FOR SALE—Golden Italian queens, untested, $1.00; 6, $5.40; 12 or more, 80c each; tested, $1.50 each. No disease. Safe arrival. Hazel V Bonkemeyer, Randleman, R. D. No. 2, N. C.

WARRANTED pure mated Italian queens, $1.25 each; 25 or more, $1.10 each, mailed in Special Sure introducing cages. No honey used in candy. Daniel Danielsen, Brush, Colo.

PINARD'S quality of Italian queens and package bees. Laying untested queens, $1.00 each. Write for prices on large lots. Circular free. A. J. Pinard, Morgan Hill, Calif.

WE are booking orders now for spring delivery for the famous "Colorado Bred Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

BEES BY THE POUND—Also QUEENS. Booking orders now. FREE circulars, giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

SELECT untested three-banded leather-colored Italian queens by return mail, at $2.00. Orders booked 15 days ahead, $1.50. Send for prices on large orders. These bees hold Indiana record for comb-honey average per colony in a run of 10 years. Charles Kennard, Knightstown, Ind.

PURE Italian and Carniolan queens, the best of either race, $1.00 each. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

QUEENS of Quality Italian. Untested, $1.00 each; 6, $5.50. Select untested, $1.25. Safe arrival. E. A. Simmons, Greenville, Ala.

Big, bright Italian queens. Bred for beauty and honey-gathering qualities. Untested, $1.25; tested, $1.75. M. P. LeMunyon, R. D. No. 3, Cassopolis, Mich.

OWEN queens from the famous Golden strain, absolutely first quality. Untested, $1.00 each; 6 for $5.00. Safe arrival. Powell Owen, Greenville, Ala.

FANCY three-band bees, nuclei and queens. Queens balance of summer, untested, $1.00 each. $10.00 a doz. Select breeding queens, $6 00. J. L. Morgan, Apalachicola, Fla.

WHEN better queens are raised Victor will raise them. Three-banded Italians only. Price, $1.00 each. Julius Victor, R. F. D. 36, Box 22, Middleport, N. Y., formerly at Martinsville, N. Y.

BIG BRIGHT ITALIAN queens by return mail, $1.00 each; $10.00 per dozen; $75.00 per 100. Safe arrival and reasonable satisfaction guaranteed. P. B. Skinner, Greenville, Ala.

GOLDEN QUEENS that produce large beautiful bees, solid yellow to tip, very gentle and prolific. Untested, $1.25 each; select tested, $3.00 each; breeders, tested, $5.00. Dr. White Bee Co., Sandia, Texas.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1 00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

HIGH-GRADE QUEENS — Three-banded Italians, also golden. Untested, 1, $1.00; 12, $9.00. Tested, 1, $1.50 12, $15.00. Safe arrival and satisfaction guaranteed. No disease. P. O. Watkins, Cullasaja, N. C.

AGAIN our northern-bred leather-colored Italian bees have wintered fine, and we guarantee that no disease exists in our yards. Queens after June 15, $1.25 each; $12.00 per doz. Charles Stewart, Johnstown, N. Y.

FOR SALE—Three-banded Italian queens, untested, each, $1.00; six, $5.50; 12, $10.00. Tested queens, $2.00 each. Safe arrival and satisfaction guaranteed. Robert B. Spicer, Wharton, N. J.

BEELINE QUEENS—Pure Golden Italians of select quality. Untested, $1.50 each; 6 for $8.00; select untested, $2.00 each; 6 for $10; select tested, $3.00 each; 6 for $15. Prompt deliveries after May 1. Free descriptive booklet. Majors Nordan, Kimberly, Ala.

FOR SALE—Strong colonies, Italian bees in Root 10-frame hives with metal covers, one year old. Young queens. No foul brood. Comb drawn from full sheets wired foundation. f. o. b. cars, $10.50. R. J. Whitney, R. D. 5, Royal Oak, Mich.

FOR SALE—Unsurpassed Italian queens, after July 1. Untested, 1, $1.00; 6, $5.75; 12, $11.00; 50, $45.00; 100, $85.00. Tested, 1, $2.00; 6, $11.00. My queens are actually laying before they are sent out. J. D. Harrah, Freewater, Oregon.

FOR SALE—Golden Italian queens, untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.50; select tested, $2.50. No disease of any kind. Safe arrival. D. T. Gaster, Randleman, R. D. No. 2, N. C.

AM now ready to ship by return mail three-banded Italian queens, $1.00 each, $10.00 a doz. Also 50 select tested, pick of all my yards, at $1.50 each. Every one fit to breed from. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

FOR SALE—Untested, $1.00 each; 6 for $5.40; 12 or more, 80c each. Tested, $1.50 each. Select tested, $2.50 each. No disease of any kind. Safe arrival and satisfaction guaranteed. Sam Hinshaw, Randleman, N. C.

HOLLOPETER'S Quality Queens and satisfactory service will please you. Untested queens from finest three-banded stock, each, $1 25; 6 to 25, $1.00 each. No disease and safe arrival guaranteed. J. B. Hollopeter, Rockton, Pa.

GRIGGS' SUPER Italian Queens, July 1. Untested, $1.00 each, or $22.50 for 25 untested queens; tested, $1.50 each; choice breeders, $10.00 each. Every colony in my breeding yard is headed by a breeding queen. L. S. Griggs, 711 Avon St., Flint, Mich.

THREE-BANDED Italian queens, select untested, $1.00; select tested, $1.50; 2-lb. package bees with select untested queen, $4.00. References: The Selma National Bank, Selma, Ala. Satisfaction given. J. Allen, Catherine, Ala.

TRY my three-frame nucleus Caucasian or Italian race, reared from the very best mothers which occupy 93 standard frames. Queens, tested, $1.50; untested, $1.00. Only Italians by return mail. No disease. Peter Schauffhauser, Havelock, N. C.

FOR SALE—Italian queens, $1.00 each; 12, $11.00; 100, $95.00. One 3-fr. nucleus, $5.00; 50 new swarms of bees for delivery from now to December 1. Satisfaction guaranteed. 3 lbs. bees, $6.00. Hickory Shade Apiary, Otterville, Mo.

GOLDEN Italian queens for 1923, the hustling kind. Satisfaction guaranteed. Will continue shipping until Sept. 15. Price, untested, $1.00 each; $10.00 per doz.; $70.00 per 100; tested, $1.50 each. E. F. Day, Honoraville, Ala.

RUSH YOUR ORDER. Pure Italian queens. Selected tested, 1, $1.25; 12, $12.00; selected untested, 1, 80c; 12, $8.00; 100, $60.00. Safe arrival and satisfaction guaranteed. No disease. Ship nothing but the best. W. C Smith & Co., Calhoun, Ala.

FOR SALE—Bright three-banded Italian queens, 1 to 12, $1.25 each; 13 to 25, $1.15 each. 10 per cent discount when ordered four weeks or more in advance. Safe arrival and satisfaction guaranteed, ready to ship June 1 to June 10. R. B. Grout, Jamaica, Vt.

"THE PROOF of the pudding is the taste thereof." So with queen bees, you can not judge their quality by a page-long ad. Try my three-banded Italian queens and know their worth. Satisfaction and safe arrival guaranteed. Circular free. Select untested queens, 75c each. P. M. Williams, Fort Deposit, Ala.

WHILE WE CONSIDER the PHELPS GOLDENS the most gentle, hardy and the best honey-gatherers, we have decided to furnish those who desire them the three-banded queens at $1.00 each. These will be PHELPS QUALITY and reared several miles from our golden yards. C. W. Phelps & Son, Binghamton, N. Y.

ITALIAN QUEENS. Yancey hustlers, three-band strain. They get the honey. Beautiful, vigorous, prolific. Now prepared to fill orders promptly. Untested, 80c each; $9.00 per doz.; $70.00 per 100; tested, $1.50 each, only one grade, select. We guarantee safe arrival and satisfaction in every respect. Caney Valley Apiaries, Yancey Bros., owners, Bay City, Tex.

PRICES REDUCED! Italian queens, very beautiful but not bred for color alone. Extremely vigorous, produce bees that are gentle and hustlers. Introduce one into each colony in summer and overcome so much winter loss. Mated to Italian drones. Clipped when requested. 1, 75c; 6, $4.00; 12, $7.50; virgins, 25c. Money back if not satisfied. Crenshaw County Apiary, Rutledge, Ala.

XUM

THREE-BANDED bees and queens, 2-lb. package with select queen, $5.00; without queen, $4.00. Tested queens, $2.00; untested, $1.25 each or $10.00 per dozen. Carolina Bee Co., W. O. Curtis, Mgr., R. F. D. 1, Graham, N. C.

NORTH CAROLINA-BRED Italian queens of Root and Miller strain of three-banded Italian bees, gentle and good honey-gatherers. From July 1 until Oct. 1, untested, $1.00 each; $11.00 per doz.; tested, $1.50 each, and selected tested, $2.50 each. Safe arrival and satisfaction guaranteed. L. Parker, Benson, R. D. No. 2, N. Car.

FOR SALE—I am booking orders for Italian bees and queens, one three-frame nucleus with one pound of bees and untested queen, $5.00, guaranteed to be no disease. Inspector's certificate will accompany each shipment. Safe delivery and satisfaction guaranteed. J. E. Arthur, Register, R. F. D. No. 1, Ga.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, $1.00; mated, $2.00; 6 for $10.00 or $18.00 per dozen; tested, $5.00. Breeders, $10.00 to $20.00. Safe arrival guaranteed only in the U. S. and Canada. C. W. Phelps & Son, Binghamton, N. Y.

GOLDEN ITALIAN QUEENS, package bees and nuclei, ready April 1 to 15. Untested queens, 1, $1.00; 6, $5.00; 12, $10.00; 100, $75.00. 2-frame nuclei with queen, $5.00; 1-lb. package with queen, $3.00; 2-lb. package with queen, $5.00; 12 or more packages, 5 per cent discount. No disease, safe arrival guaranteed. 20 per cent to book orders for spring delivery. J. F. Rogers, Greenville, R. F. D. 3, Ala.

THREE-BAND ITALIANS—My stock is developed by continuous selection from the best and most popular strains in the country. When I can produce or discover better they will be adopted. Queens untested after May 15, $1.50 each, six for $8. Tested, $2.50 each. CARNITALIANS, a cross derived from pure imported Carniolan mothers and Italian drones, tested. June 1, $2.50 each. Protheroe, Rustburg, Va.

TWO-FRAME nuclei, two-pound combless packages, or 2 pounds bees on standard frame for food (with some brood) with Italian queen, $3.50; 25, $3.25; 50, $3.10; 100, $3.00. Larger packages will be furnished for 80c per frame or pound additional. I make the above offer as this is the last shipping month of this year. No disease in any of my apiaries. Safe arrival and satisfaction guaranteed. F. M. Morgan, Hamburg, La.

DAY BY DAY in every way our queens please our customers. We have spent years in selecting and breeding queens for production and quality. We hatch and mate our queens in three-frame nuclei. They are large and vigorous, pure three-banded Italians. Satisfaction guaranteed. We now are offering breeding queens at $7.50 each. Untested, $1.00, 25 or more, 90c; tested, $2.00; 25 or more, $1.75. Rule Brothers, Terlton, R. F. D. No. 1, Box 30, Okla.

MISCELLANEOUS.

PEONIES and Iris. Beautiful, fragrant, hardy. Surplus prices very low. L. W. Lighty, East Berlin, Pa.

THE BEE WORLD—The leading bee journal in Britain and the only international bee review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a post card today. It is well worth your little trouble.

Patents Practice in Patent Office and Court. Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D. C.

Root Quality Supplies
East St. Louis, Ill.
O. G. RAWSON, 3208 Forest Place.
Send for Catalog.
Authorized Distributor for St. Louis district.
BEES AND QUEENS.

BEEKEEPERS' SUPPLIES
The kind you want and bees need. Good stock of the A. I. Root Co.'s make of goods on hand. Catalog free. Beeswax wanted.

J. NEBEL & SON SUPPLY CO., High Hill, Mo.

New England Beekeepers
If you want the best there are in supplies send in your order, we have them here. Don't wait till the rush is on, send today. We have everything for the beekeeper. Our catalog is yours for the asking.
H. H. JEPSON,
182 Friend St. Boston, 14, Mass.

MASON BEE SUPPLY COMPANY,
Mechanic Falls, Maine.
From 1897 to 1923 the Northeastern Branch of The A. I. Root Company.
PROMPT AND EFFICIENT SERVICE
BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1923 catalog send name at once.

The Apiarist's Friend,
GERMAN SCYTHES AND SICKLES.
Permit the maximum work with the minimum disturbance of the colonies. Catalog on request.
THE MARUGG CO., Dept. B, Tracy City, Tenn.

Indianola Apiary Company
Italian bees and queens delivered as follows:
One-pound package with untested queen, $3.25
Two-pound package with untested queen, 5.25
Three-pound package with untested queen, 6.25
Untested Queens, each 1.00
Tested Queens, each 1.50
Satisfaction guaranteed.
Prompt service a specialty.
J. W. SHERMAN, INDIANOLA APIARY CO., VALDOSTA, GA.

Root Quality Bee Supplies
Full Stocks :: Prompt Service
A. I. ROOT COMPANY OF NEW ORLEANS
2042 Magazine St., New Orleans, La.
Also headquarters for Elton Warner's Three-banded Italian Queens.

Honey Containers

5-lb. friction top pails, per reshipping case of 12 ..... $1.10
10-lb. friction top pails, per reshipping case of 6 ..... .90
5-lb. friction top pails, per crate of 100 ..... 7.00
5-lb. friction top pails, per crate of 200 ..... 13.50
10-lb. friction top pails, per crate of 100 ..... 10.00
60-lb. square honey cans, per case of 2 cans 1.25
60-lb. square honey cans, per case of 1 can ..... .80
60-lb. square honey cans, in bulk, each ..... .40
16-oz. round glass jars, per reshipping case of 24 ..... 1.35
6½-oz. tin top tumblers, per reshipping case of 48 ..... 1.60

Write for prices on shipping cases. Our cases are neat, smooth and strong, made from white winter-sawed basswood.

SECTIONS!

No. 2 4¼x4¼x1⅞ two-beeway, per 1000 ..... $9.50

We have an oversupply of these sections, and are offering them at this reduced price for a limited time only.

We carry a full line of Bee Supplies; write for our free descriptive catalog and price list.

AUGUST LOTZ CO., Boyd, Wis.

Honey Containers

2½-lb. cans, per carton of 100 ... $4.25
5-lb. pails, per carton of 50 ..... 3.50
10-lb. pails, per carton of 50 ..... 5.00

Above packed in cartons which are dustproof, light and easy to handle, keeping your pails and cans clean until you are ready to use them.

2½-cans, per case of 24 ..... $1.25
5-lb. pails, per case of 12 ..... 1.10
10-lb. pails, per case of 6 ..... .90

Above packed in wooden reshipping cases.

5-gal. cans, 1 per case ..... .90
5-gal. cans, 2 per case 1.25

GLASS JARS.

8-oz. honey capac., per case of 24 $1.25
16-oz. honey capac., per case of 24 1.50
32-oz. honey capac., per case of 12 1.30

Above prices F. O. B. Reedsville.

Write for prices on large quantities of Pails and Glass Jars, stating number and sizes wanted.

A. H. Rusch & Son Co.
Reedsville, Wis.

HONEY CONTAINERS

White Glass Jars.
White Glass Tumblers.
Comb Honey Cartons.
Parcel Post Cans.
Tin Cans
"Honey for Sale" Signs.
60-lb. Square Cans.
Comb Honey Display Cases.
Comb Honey Paper Shipping Cases.
Comb Honey Wooden Shipping Cases.
Carriers for Shipping Comb Honey.
Scales for Weighing Sections.

Write for leaflet giving prices on honey containers.
Prompt Service. Quality Goods.

A. I. ROOT COMPANY OF CHICAGO
224-226 WEST HURON STREET, CHICAGO, ILLINOIS.

Mr. Beekeeper

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. **We pay the highest cash and trade prices for beeswax. Write for free illustrated catalog today.**

Leahy Mfg. Co., 95 Sixth St., Higginsville, Mo.

Texas Distributors—Albert M. Hunt & Sons, Goldthwaite, Texas.

XUM

JUST NEWS

Continued from page 480.

The Department of Agriculture of the Province of Quebec has issued a new bulletin on beekeeping in the French language. This is bulletin No. 62 entitled "L'Apiculteur Pratique."

* * *

The New Zealand Beekeepers' Journal, the official organ of the National Beekeepers' Association of New Zealand, has ceased publication and is now incorporated in the New Zealand Fruit Grower, published in Auckland.

* * *

The Arkansas State Beekeepers' Association will meet at Eureka Springs, Arkansas July 13-14. Several speakers from outside the state are expected to attend this meeting. Full particulars in regard to this meeting may be obtained by writing to J. V. Ormond, Elba, Ark.

* * *

The rules and regulations prohibiting the importation of adult honeybees into the United States have been signed by the Secretary of Agriculture and are now effective. Copies may be obtained by any one interested by writing to the Department of Agriculture, Washington, D. C.

* * *

The annual summer meeting of the Western New York Honey Producers' Association will be held on Wednesday, August 1, 1923, at the home of John N. Demuth, Pembroke, N. Y. Information in regard to this meeting can be had by writing to John N. Demuth, secretary of the association.

* * *

The Nebraska Honey Producers' Association is sending postal cards to its members at intervals giving timely suggestions to beekeepers. These timely suggestions alone should be worth more than the $1.00 annual membership fee. F. M. Parsons, 4202 Cuming St., Omaha, is the secretary-treasurer of this association.

* * *

The report of projects in the various state experiment stations shows that 12 states, as well as the stations in Porto Rico and Guam, have projects in beekeeping, these being the same states that had projects in beekeeping last year with the addition of Arizona. In all, 32 projects are reported, most of them being continuations of the projects of the previous year.

* * *

A new bulletin entitled "Bee Culture in British Columbia" has recently been issued by the Department of Agriculture, Province of British Columbia. This bulletin was written by W. J. Sheppard, Provincial Apiarist, A. W. Finlay and J. F. Roberts, assistants.

* * *

Edw. A. Winkler, Joliet, Ill., who has been instrumental in inducing farmers in Will County, Illinois, to grow Hubam clover on an extensive scale, reports that one manufacturer of threshers is now putting out a combination clover-huller and thresher especially adapted to hulling sweet clover. This will no doubt encourage increased plantings of Hubam clover in the corn belt. It will be remembered that Mr. Winkler recently wrote a series of articles for this journal on the subject of Hubam clover. He has found that it pays him well to encourage the use of this new plant in the vicinity of his apiaries.

BEES AND ROOT QUALITY SUPPLIES.

We have a large and most complete stock of beekeepers' supplies now ready for immediate delivery. Order early and have your supplies on hand when the bees need them. Supplies exchanged for wax. Write for catalog.

A. M. MOORE, ZANESVILLE, OHIO.

Italian Queens

Untested Queens	$1.50 each.
Select Untested Queens	1.75 each.
Tested Queens	2.50 each.
Select Tested Queens	3.00 each.

Write for prices on lots of ten or more.

F. COOMBS & SONS

BRATTLEBORO, VERMONT.

Agents for Root Quality Bee Supplies.
Catalog on request.

TOO LATE TO CLASSIFY.

FOR SALE—20 Danz. extracting supers, full frames. Lauerman, 1514 Wilson Ave., Chicago, Ill.

FOR SALE — Good three-banded Italian queens, $1 25 each; 6, $6.00. Ronald Kirk, Rockton, Pa.

HONEY LABELS that have broken away from the all-look-alike bunch. Made to suit your ideas. Lowest prices. Catalog FREE. Liberty Pub. Co., Sta. D, Box 4024, Cleveland, Ohio.

WANTED—Superintendent of apiaries. An important honey company operating in the Hawaiian Islands needs a man for superintendent, one who understands the bee business from a practical standpoint in every way and who can raise good queens. Passage paid to Honolulu and house provided. If interested and can meet all requirements write in first instance to The A. I. Root Company, Medina, Ohio.

Our Guarantee and Advertising Conditions.

Believing that all the advertisers in this journal are trustworthy, we make the following guarantee of our advertising, together with a statement of the conditions we must exact both from our advertisers and from our subscribers who may patronize such advertisers:

OUR GUARANTEE (subject to conditions herein mentioned): We will make good to paid subscribers the loss of money that may be sent to any deliberate swindler or irresponsible advertiser by reason of any misleading advertisement that may be printed in our columns.

We will promptly discontinue the advertisement of any advertiser against whom a clearly valid complaint is made by a subscriber, and such advertiser will not be restored (if at all) to our columns until he has fully satisfied such complaint; furthermore, if we find that the facts sworn to in affidavit by the complainant and the circumstances warrant it, we will then not only exclude the advertiser from our columns, but at our own expense will proceed (by law, if necessary) to compel him to make restitution or to secure his proper punishment.

WHAT WE DO NOT GUARANTEE: We will not guarantee against bankrupts sanctioned by the courts. We will not guarantee the settlement of disputes between subscribers and honest advertisers, nor against loss and delay caused by honest advertisers who may be unable to fulfill conditions or contracts because of innocent misfortune or unfavorable conditions beyond their control. We will not guarantee any deal for bees and queens in which the purchaser advances the cash to the queen or bee rearer without an arrangement, either through a bank or express company, whereby the purchaser can examine the bees or queens upon arrival and before the cash is released to the shipper—wishing our subscribers to take the same business care we ourselves would take in making a deal for queens or bees and trusting our "cash in advance" to those only who we know by experience have an established record of honest business dealing. (In making this last condition, we in no way challenge the right and propriety of the honest, business-like, prompt queen or bee rearer to ask pay in advance, either the whole or part, for he is worthy of such confidence, has proved himself, and can secure orders on cash-in-advance terms. But the purchaser should know his bee or queen dealer, if he is to advance the cash, and if he does so it must be at his own risk—not ours). We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedsman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consider this fact in their favor. We will not guarantee advertisers more than one month after the last appearance of their advertisements in our columns. We will not guarantee temporary advertisers for "help wanted," "position wanted," nor advertisers of single sales or of small or secondary articles, in which transaction the terms of bargain and payment are special and the purchaser can, by taking care, guard his own interests.

CONDITIONS INCUMBENT UPON OUR SUBSCRIBERS: In order that our subscribers may secure the benefit of our advertising guarantee, in case of need to do so, they must mention in writing to advertisers that they are replying to an advertisement seen in Gleanings in Bee Culture. They must give notice of complaint against an advertiser within one month of the transaction complained of, and only after having made written complaint to the advertiser in question; such complaint to us must be in the form of a sworn affidavit as to the facts set forth in the complaint, if the complainant wishes us to take up his claim against the advertiser; the right of examination of the article to be purchased before payment for it, must be demanded and made in all cases wherein the purchaser does not know to his full satisfaction the dealer of whom he is to purchase. Our subscribers will be solely responsible for the terms they agree to with advertisers and must use all reasonable caution and diligence in making such terms and in satisfying themselves of the conditions and quality of any article or commodity offered for sale.

CONDITIONS INCUMBENT UPON OUR ADVERTISERS: We reserve the right, at any time, to cancel any advertising contract and discontinue advertisement, and refund, pro rata, for space not furnished under contract. Every advertiser, unless well known to us and with an established record for honest and prompt dealing, will be required to furnish satisfactory credentials as to both character and financial standing, the endorsements of a local banker, postmaster, and official, or three other endorsements equally as good, being asked for by us. Queen and bee rearers, who seek to advertise in our columns, must furnish not only satisfactory character and financial references, but must sign our Code for the Sale of Queens and Bees, answer our questionnaire as to their beekeeping and apiary conditions; and, if new in the business of selling queens and bees, must furnish us with the endorsement of at least five reputable beekeepers or a beekeepers' society, or give an indemnity bond, or furnish us with both the endorsement of beekeepers and the bond. All advertisers must not only deal honestly, but they must follow correct business practice, be prompt in business correspondence and in the delivery of goods, or else expect to be barred from our advertising columns for such business delinquencies.

Advertisements of the sale of bees in whole colonies must contain a guarantee that the bees so offered are free from all disease.

WHAT WE SEEK TO ACCOMPLISH: By this guarantee and its conditions we seek the accomplishment of two purposes: to drive the unreliable advertiser out of our columns and even punish him by law if he so deserves and it is possible to do it; to be relieved of the burden thrown upon us in the past by the unwise deals of our readers and unjust complaints against honest advertisers.

GLEANINGS IN BEE CULTURE,
The A. I. Root Co., Publishers.

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CARNIOLANS

are very hardy, gentle, and as honey gatherers are unexcelled. WRITE FOR OUR FREE CIRCULAR, which gives you more fully the merits, management, etc., of this prolific race. INVESTIGATE, get the facts. CARNIOLANS merit your trial over others.

W. A. HOLMBERG - - - - DENAIR, CALIFORNIA

$1.00 GOLDENS

From now until Oct. 1. Untested queens, $1.00 each, or 6 for $5; 50 untested, $40. Promptness and satisfaction guaranteed.

R. O. COX, RUTLEDGE, ALABAMA.

QUEENS OF

MOORE'S STRAIN

OF ITALIANS PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.

Untested queens, $1.25; 6, $6.50; 12, $12.00. Select untested, $1.50; 6, $8.00; 12, $15.00. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE, QUEEN BREEDER,
Route 1, Morgan, Kentucky.

SEE THIS!

⅜ in. No. 20 Flat Head Needle Point Nails

KEG LOTS, 15c lb.

Immediate acceptance—subject to prior sale.

EDWARDS & CHAMBERLIN HDWE. CO.
KALAMAZOO, MICHIGAN.

Special Sale on Tested Queens

Wishing to requeen some of my honey-producing colonies, I am offering for sale about 60 Tested Queens, 1 year old, Root strain, all clipped, at $1.50 each, or $17.00 per dozen.

IRVIN R. VAN DEVIER, Medina, Ohio.

BEES---Italian Bees---BEES

Full colonies with Italian queen at $15; 3 for $30. 3-frame nucleus with Italian queens at $6. 3-lb. package with Italian queen at $5.50; 5 or more at $5 each. No disease. Safe arrival and satisfaction guaranteed.

VAN'S HONEY FARMS
Van Wyngarden Bros., Props. Hebron, Ind.

THE REXFORD Push-in-Comb Introducing Cage is the safest, simple way known of introducing queens in full colonies. The principle has never been questioned. It is G. M. Doolittle's Push-in-Comb Cage made practical (see "Scientific Queen-Rearing," page 113) and of which he said, "There is no need of losing any queen." It also includes the principle of the Thompson Introducing and Mailing Cage. 35c, three for $1.00.

O. S. REXFORD, WINSTED, CONN.

4%
BANKING BY MAIL

THE HOME OF THE HONEY-BEE

We accept Savings deposits by mail on exactly the same terms as though made in person at the bank, and people in all parts of the country transact their banking business in this manner.

THE SAVINGS DEPOSIT BANK CO. MEDINA OHIO
A. T. SPITZER PRES. E. R. ROOT VICE PRES. E. B. SPITZER CASHIER

You can have cash for your wax and old combs or cappings at the market price, or we allow a little more in exchange for supplies. Write for our terms and prices.

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY

FALCONER, NEW YORK (Near Jamestown).

"Where the best beehives come from."

Ask for Catalog. Booklet, "Simplified Beekeeping for Beginners," free.

CARNIOLANS

are very gentle, very prolific, excellent honey-gatherers, build exceedingly white combs, resist brood diseases equal to any other bees, and will swarm no more than Italians if intelligently managed. Ask for my free paper, "MERITS OF THE CARNIOLAN BEE," describing their characteristics more fully. During July at the close of the white honey flow is a good time to requeen with this excellent race of bees.

PRICES.

1 untested queen $1.50
12 untested queens 17.00
Tested queens, each..... 2.50

Safe arrival by mail and satisfaction guaranteed.

A. G. HANN, Glen Gardner, New Jersey.

JULY QUEENS

PURE THREE-BAND ITALIANS BRED FOR QUALITY AND HONEY-GATHERING.

One untested $0.75
25 untested, each..... .70
50 untested, each ..... .65
100 untested, each..... .60
Tested, each 1.50

Prompt Service and Satisfaction Always Given. No Disease.

D. W. HOWELL, Shellman, Ga.

The Stapleton Apiaries

Read the following unsolicited testimonial:

"Detroit, Mich., May 23, 1923.—Your queens have proved to be mighty good queens. My hives are now boiling over. I never have had increase so fine. (Signed) J. D. Carter."

PRICES JULY AND AUGUST.

Untested Queens: 1, 70c; 6, $4.00; 12, $7.50; 100, $60.00.

Tested Queens: 1, $1.50; 6, $8.50; 12, $16.00.

No disease. Satisfaction guaranteed.

N. L. STAPLETON, Colquitt, Ga.

PENNSYLVANIA BEEKEEPERS

Don't forget the new Bee Law about having everything in movable frames, which takes effect right now.

Remember the service you always got from Dubois, the headquarters for Bee Supplies. Formerly Root's Goods, now Lewis Beeware, the best in every way.

The two big hits of the season, the Slotted Bottom-bar Frame and the Dadant Wired Foundation.

Everything in Bee Supplies.

JOHN N. PROTHERO
DUBOIS, PA.

World's Best Roofing
at Factory Prices
"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofing, Sidings, Wallboard, Paints, etc., direct to you at "ock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.
Edwards "Reo" Metal Shingles
have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.
Free Roofing Book
Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183
LOW PRICED GARAGES
Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.
THE EDWARDS MFG. CO.
783-785 Pike St. Cincinnati, O.
FREE
Samples & Roofing Book

Scott Queens are Good Queens

THEY SURE DO GET THE HONEY! One customer writes: "Dear Mr. Scott: Got a queen from you last fall, and her colony filled five supers this summer. Yours truly." (Name on request.) THEY WILL DO AS WELL FOR YOU. Untested queens, Golden or Three-banded: One, $1.25; six, $7.00; doz., $13.00. Pure mating, safe arrival and satisfaction. Write for circular.

THE SCOTT APIARIES, LAGRANGE, INDIANA.

XUM

A Superior Quality at Less Cost

Supplies

A Superior Quality at Less Cost

(MADE BY THE DIAMOND MATCH COMPANY)

Compare our prices. A trial order will convince you of the superior quality.

1-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom, Hoffman frames, nails, rabbets.

Standard size crate of 5, K. D., 10-frame.....$13.90
Jumbo size crate of 5, K. D., 10-frame..... 14.95

Hive Bodies and Extracting Supers

With Hoffman frames, nails, rabbets.

Standard size, crate of 5, K. D., 10-frame.....$6.15
Jumbo size, crate of 5, K. D., 10-frame..... 7.20
Shallow crate of 5, K. D., 10-frame..... 4.45

Hoffman Frames

Corner-cut top-bar.

Standard size 100, $5.45; 500, $26.25
Shallow 100, 5.25; 500, 25.20
Jumbo 100, 6.10; 500, 29.40

Diamond Brand Foundation

SPECIAL PRICES! SPECIAL PRICES!
Medium .....5 lbs., 65c lb.; 50 lbs., 60c lb.
Thin Super .....5 lbs., 70c lb.; 50 lbs., 65c lb.

Comb Honey Supers

No. 1 style for 4¼x4¼x1⅞ sections, including section-holders, separators, springs, tins and nails.

Crate of five, K. D., 10-frame.....$4.30

July Specials **WATCH FOR OUR SPECIALS EACH MONTH** July Specials

For Month of July Only

10-frame Comb Supers for 4 x 5 Sections. Crate of 5 K. D......**$5.50**
Sections 4 x 5 x 1⅞ A grade—500, $5.50; 1000.....**$10.50**

Hoffman & Hauck, Inc.

Woodhaven, New York

Berry's Reliable Italian Queens and Service

Twenty-seven Years of Select Breeding

Our queens continue to please old customer friends. Try them and learn the reason why. Little booklet describing our strain and methods of production mailed on request.

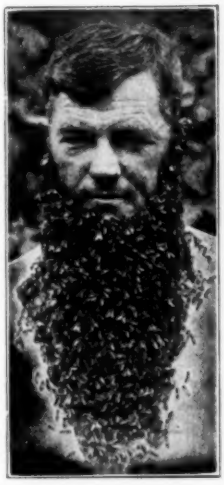
PRICE LIST OF OUR QUEEN BEES
Now ready to mail or as per booking.

Select Untested, 90c each; 12 to 50, 85c; 50 to 100 up, 75c each.
Select Tested: $2.00 each; 12 to 50, $1.85; 50 to 100 up, $1.75 each.
Virgins, 40c each. Breeders, $5 and up.

We guarantee our queens to be purely mated, to arrive in perfect condition and to give absolute satisfaction. Wings we clip free of charge when requested.

M. C. BERRY & CO.
BOX 697, MONTGOMERY, ALABAMA.

QUEENS



We can now fill orders promptly for our high-grade Italian queens.

Prices for the Remainder of the Season.

1 to 4...$1.50 ea.
5 to 9... 1.45 ea.
10 to 99. 1.40 ea.
100 up.. 1.20 ea.

Breeders, service guaranteed for the season, $10.00 each. A card will bring our catalog.

JAY SMITH

ROUTE 3. VINCENNES, IND.

ITALIAN QUEENS---THREE BANDED AND GOLDENS

After rearing queens in a commercial way for 12 years, and on a large scale, we believe we can offer as good queens as can be had. Our breeder has reared over 110,000 queens, and beekeepers who wanted good stock have bought them, and got good results from them.

We use only the best breeding stock, and use only the best methods in rearing our queens. Send us your order and get good value for your money. Everything we sell must please or we refund your money.

PRICES OF QUEENS.

Untested Queens:		Tested Queens:	
1 Queen	$ 0.75	1 Queen	$ 1.50
12 Queens	9.00	12 Queens	17.00
100 Queens	65.00	Good breeders, each	5.00
1000 Queens	600.00		

Golden Queens are reared five miles from other queen yards. Let us fill your order. We are mailing Queens promptly.

THE CITRONELLE APIARIES, CITRONELLE, ALABAMA.

Glass and Tin Honey Containers

Both Glass and Tin Can Manufacturers have advanced prices. We are making no change in our prices.

2½-lb. cans, crates of 100.....$4.00	**WHITE FLINT GLASS, WITH GOLD LACQUERED WAX LINED CAPS.**
5-lb. pails (with handles), crates of 100 7.00	
10-lb. pails (with handles), crates of 50 5.25	8-oz. honey capacity, carton of 3 doz..$1.50
60-lb. tins, 2 per case, new, per case.. 1.00	16-oz. honey capacity, carton of 2 doz. 1.20
60-lb. tins, 2 per case, used, very good .25	3-lb. honey capac. (qt.), carton of 1 doz. .90

Hoffman & Hauck, Inc., Woodhaven, N. Y.

Mott's Northern-Bred Queens

Sel. Untested, 1, $1.00. Sel. guaranteed pure mated, $1.25. Sel. Tested, $2.50. Virgins, 60c. Plans "How to Introduce Queens," 25c. Bees by the pound after June 1. 172 miles from Windsor, Can. Save the vitality of your queens.

E. E. MOTT, GLENWOOD, MICH.

BARNES' HAND & FOOT POWER MACHINERY

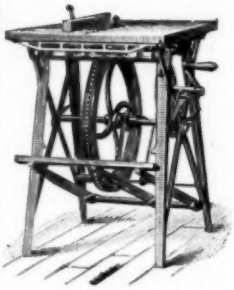
This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial.

Send for illustrated catalog and prices.

W.F.& John Barnes Co.

545 Ruby Street
ROCKFORD, ILL.



NORTHWESTERN HEADQUARTERS FOR ITALIAN QUEENS

The queen is the life of the colony. You cannot afford to keep poor queens or a poor strain of bees. I have been in the bee business for more than twenty years and have made every effort to improve the honey-gathering qualities of my bees by purchase of breeders and by selective breeding. I believe that my bees are unsurpassed by any. When you buy Untested Queens from me you are getting select untested queens.

PRICES AFTER JULY 1: Untested Italian Queens—1, $1.00; 6, $5.75; 12, $11.00; 50, $45.00; 100, $85.00. Tested Italian Queens—1, $2.00; 6, $11.00.

I have no pound packages or nuclei for sale.

J. D. HARRAH, Route 1, Freewater, Oregon

"$200.00 FOR A QUEEN!"

Lockhart's Silver-Gray Carniolans

We will pay $200.00 for a breeding Carniolan queen if she will produce stock (all points considered) equal to our own, and owner can prove she is in no way related to our "line bred" strain. 40 years of experience, breeding this wonderful race of bees; 36 years a breeder and importer of queens. They are very hardy, gentle, prolific, great workers and builders of very white comb; use mostly wax in place of propolis. Not inclined to rob like Italians; winter extra well and build up quickly in spring. Prices of queens for July to November: Untested queens, $1.00 each; 6, 95c each; 12, 90c each; 25, 80c each; 50 or more, 75c each. Select Untested Queens, $1.50 each; 6, $1.45 each; 12, $1.40 each; 25, $1.25 each; 50 or more, $1.00 each. Tested Queens, $2.50 each. Select Tested, $3.50. Breeders, $5.00 and $10.00. Safe arrival and satisfaction guaranteed in U. S. and Canada. No foul brood here.

F. A. Lockhart & Co., Lake George, New York.

Do You Want a Big Honey Crop?

Then Head Your Colonies With Our Imported Stock from Italy

Mr. W. J. Thill, New Richmond, Wis., writes: "Your queens have given me the very best satisfaction—in fact, the one from your imported stock, one of the best, giving me five supers of comb honey."

Thagard's Italian Queens--Bred for Quality

have produced similar results for thousands of beekeepers. They are hardy, gentle, prolific, disease-resisting and great honey-gatherers. We guarantee safe arrival, pure mating and perfect satisfaction the world over.

Untested: 1 to 4, $1.00; 5 to 11, 80c; 12 to 25, 70c; 25 to 100, 60c.

The V. R. Thagard Company, Greenville, Alabama.

THREE-BANDED ITALIANS

21 Years a Beekeeper

BOOKING ORDERS FOR 1923.
QUEENS READY APRIL 1.

We ship thousands of our Old Reliable Three-banded Italian Queens all over the U. S. A. and Canada every year. They are of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, very resistant to brood diseases, and the best of honey-gatherers. We have sold a good many queens to parties who are using them in stamping out foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed in U. S. and Canada. Circular and price list free.

Untested—$1.25; 6, $6.50; 12, $12.
Tested—$2.50; 6, $14.00; 12, $27.
Sel. Unt.—$1.50; 6, $8.00; 12, $15.
Select Tested—$3.00 each.

JOHN G. MILLER

723 C Street. CORPUS CHRISTI, TEXAS

FOREHAND & POOLE

BREEDERS OF

Pure Three-Band Italian Queens

Our yard is located where there is a natural honey flow at all times. Cells accepted and drawn out under this condition produce queens of a superior quality. Let us have your order and be convinced. We can ship you queens from breeders direct from Italy if preferred. Safe arrival and satisfaction guaranteed in U. S. and Canada.

Untested, 1 to 11, 85c; 12 to 24, 75c; 24 and over, 70c. Select Untested, 1 to 11, $1.25; 12 to 24, $1; 24 and over, 95c. Tested, $2 each.

FOREHAND & POOLE
MUSSEL, ALA.

NOTICE:—Please make P. M. O. payable to office at Greenville, Ala.

PATENTS.

I make a specialty of patents, trade-marks and copyrights. Protect and profit by your ideas. Advice and terms on request. Eleven years' active practice before U. S. Patent office. Write today. Lester L. Sargent, patent lawyer, 524 Tenth St., Washington, D. C.

Queens CONNECTICUT *Queens*

UNTESTED JUNE 1.
We ship only the highest quality three-banded Italian Queens and Bees.

1	$ 1.10
12	11.00
50	47.00
100	90.00

TRY US FOR QUALITY AND SERVICE.

QUEENS NEA

We guarantee satisfaction, safe arrival and freedom from disease or money refunded.

PACKAGE BEES AND NUCLEI WITH QUEEN.

2 lbs. $4.50 ea., 10 or more, $4.00 ea.
3 lbs. $5.50 ea., 10 or more, $5.00 ea.
2-frame Nuclei ..... $5.00 ea.
3-frame Nuclei ..... $6.00 ea.

THE NEW ENGLAND APIARIES

PHONE 1776. NEW BRITAIN, CONN.

Collier's Three-Banded Italian Queens and Bees

Airship Quality. Submarine Prices. Queens by Return Mail.

If you want bees and queens at a low price that are as good as those sold at a high price, why not give mine a trial? I do not claim my bees and queens to be the best, but they are as good as money can buy at any price. You take no risk buying from Collier. If you are not entirely satisfied, I will replace or refund your money. One-fourth down will book your order; balance due just before shipment is made. Safe delivery absolutely guaranteed in U. S. and Canada.

PRICES:	1	6	12	24	100
Untested	$0.75	$4.25	$8.00	$15.50	$62.00
Select Untested	1.00	5.50	10.00	19.50	75.00
Tested	1.75	9.50	18.00	34.00	

2-lb. package with select untested queen, 1 to 12, $4.00; 12 or more, $3.85 each.

D. E. COLLIER - - RAMER, ALABAMA

QUEENS

Jensen's Queens

Three-Band Italians Only. Worth Twice Our Price.

Untested, 75c each; 50, $35.00; 100, $65.00. Select Untested, add 25c per queen. Tested, $1.25 each. These prices hold balance of season.

Start now laying the foundation for next year's work. The first consideration is good queens like ours. During the next two or three months will be the ideal time to requeen. Thus you are assured of having a sufficient number of young bees to start the winter, and the queens will have the needed vitality to withstand the strain of heavy spring brood-rearing necessary to insure the maximum honey.

Our cells are produced in powerful colonies; queens hatch, mate and start laying in large nuclei of three and four frames, which are interchangeable with our other hive equipment, near as possible to natural colony condition. CAN YOU BEAT IT?

We have never had any disease. Inspection certificate with each shipment. Packed in large cages with plenty of young bees. We are forced continually to enlarge on our several queenyards; WHY? For a square deal address your orders to

JENSEN'S APIARIES

Crawford, Mississippi.

SELECTED QUEENS

of the Highest Quality

Queens by return mail.
Three-banded queens our specialty.

Our queens produce bees that are wonderful honey-gatherers, gentle and most resistant to all diseases. We guarantee every queen we ship to give entire satisfaction. We clip wings free of charge on request. Safe arrival and prompt delivery fully guaranteed. There may be other queens just as good, but we believe you will find few better. To know them, try them.

PRICES.

Select untested	**$0.75 each**
50 or more	**.60 each**
Select Tested	**1.50 each**

Hayneville Apiary Co.
HAYNEVILLE, ALA.

Leininger's Strain of Italians

We have been queen-breeders for nearly 50 years. In all this time we have tested nearly every strain of Italian bees in the U. S. A. By this careful selection and breeding we have succeeded in producing a strain of bees surpassed by none but superior to many, bees that are gentle and great honey gatherers.

Therefore if you buy queens from us you may be assured that back of them are nearly 50 years of careful breeding for the production of honey.

As we are located in a red clover belt, it is but natural that our bees should have a long-tongue reach.

We will sell queens from this superior strain as follows:

Untested, 1 to 5 $1.00 each; 6, $5.50; 12, $10.50; 100, $85.00.

Tested, $1.50 each; select breeders, $5.00 to $10.00 each.

Safe arrival and satisfaction guaranteed.

Fred. Leininger & Son
Delphos, Ohio

Queens 70c

By Return Mail

Mr. Beekeepers, head your colonies with a 70c queen, not a cheap queen but a queen of the best at a cheap price and watch them build up and prove to your satisfaction as good as any you have ever tried; if not, we will replace or refund your money. When you introduce NORMAN BROS. queens, beekeepers, you can feel assured you have a queen that will do her duty and as good as any in U. S. A., which is backed by years of improving and selecting from the finest mothers and mated to drones that are selected. Our bees are hardy, prolific, disease-resisting and honey gatherers. Orders filled by return mail.

Prices June and July.

	1	6	12	100
Unt. Queens	$ .70	$4.00	$7.50	$60.00
Sel. Untested	.85	4.75	9.00	70.00
Tested Queens	1.50	8.50	16.00	

Select Tested....1.75 each.

One 2-lb. package of bees with select untested queen, $4.00 each; 12 or more, $3.80 each.

GUARANTEE—We guarantee pure mating, safe arrival, freedom from all diseases and satisfaction in U. S. A. and Canada.

Norman Bros. Apiaries, Naftel, Ala.

HIGH GRADE ITALIAN QUEENS

BY RETURN MAIL
3-BANDED
LEATHER-COLORED
BRIGHT YELLOW

Last season we added two breeding queens to ours, one from The A. I. Root Co. and one from Jay Smith, and are rearing queens from them in separate yards. We rear our queens by the Doolittle method in very strong colonies, and mate them in strong nuclei containing 4 standard frames, which insures as good queens as can be produced.

PRICES AFTER JULY 1.

	1 to 9.	10 to 24.	25 to 50.
Unt. Queens.	$1 00 ea.	$0.95 ea.	$0.90 ea.
Sel. Untest.	1.25 ea.	1.15 ea.	1.10 ea.

FRANK BORNHOFFER
MT. WASHINGTON (CINCINNATI), OHIO

Quality Queens

THREE-BANDED GOLDENS

Ohio Valley Queens are as fine as can be had. Reared from the finest honey-gathering strains of Italians, and we feel sure you will be well pleased with them, for we spare no trouble or expense to produce queens of the best quality. Why not be one of our many satisfied customers? Many have experienced a poor season and are probably discouraged and disappointed; but let's hope, look forward to better times and prepare now for next season. One important point in next year's honey crop and in wintering successfully is a good queen now.

Queen Prices, July 1 to Nov. 1.

Untested, 1 to 12 .....$0.85 each.
Sel. Untested, 1 to 12..... 1.15 each.
Sel. Tested, 1 to 12..... 1.75 each.
Virgins (not mated)..... .50 each.

For quick service send us your order. Entire satisfaction and safe arrival guaranteed in U. S. and Canada. Wings clipped free on request.

Ohio Valley Bee Company
CATTLETTSBURG, KY.

Mayeux Quality Queens Stand for Themselves!

We are prepared to furnish you with our high-grade light three-banded queens for the balance of the season. Note our long line-bred three-banded only—that means queens all alike. Our bees are very gentle, hard workers, nice to look at and will clean up the house.

We do not mail queens that are not selected; so, in ordering from us, you are always on the safe side.

All correspondence answered same date. Orders booked and filled very promptly; we will replace all queens that do not prove perfectly satisfactory.

We guarantee safe delivery anywhere and no disease. Our prices are as follows for selected queens; remember we mean a good queen.

Selected Untested, each.....$1.00
Selected Tested for breeding.. 2.00
6 Selected Untested for..... 5.50
12 for 10.00

Do not delay, send your orders to the home of good queens.

Oscar Mayeux, Hamburg, La.

Mack's 3-Band Italians

Are now building hundreds of the very finest queen-cells. We are being kept so busy rearing and mailing queens that we haven't time to tell you about all their good qualities. We want you to place our queens alongside any queens you may buy on the market, regardless of price, breed or color, and note their superiority. Every queen guaranteed to reach you in good condition (U. S. and Canada), to be purely mated and to give what you think is satisfaction. We have the bees, the equipment and the experience to furnish a thousand of these GOOD queens a month.

PRICES.

	1-49.	50-99.	100 up.
Untested	$1 00 ea.	$0.95 ea.	$0.90 ea.
Sel. Unt...	1.25 ea.	1.20 ea.	1.15 ea.
Sel. Tested..	2.00 ea.	1.85 ea.	1.75 ea.

For full information send for free catalog.

HERMAN McCONNELL
ROBINSON, ILLINOIS

XUM

For Years

We Have Been Shipping Thousands of Pounds of Bees All Over U. S. A. and Canada.

ORDER DIRECT FROM THIS AD. WE ARE PREPARED TO TAKE CARE OF YOUR RUSH ORDERS.

2-pound package Bees.....$3.75 each; 25 or more, $3.60
2-frame Nuclei .....Same price as above
3-pound package Bees.....$5.25 each; 25 or more, $5.00
3-frame Nuclei .....Same price as above

QUEENS FREE when 25 or more packages are ordered.

Untested Queens. $1.00 each; 25 or more, 85c each; $70.00 per hundred.
This is a special sale on high quality Untested Queens.

Select Untested .....$1.70 each; 25 or more, $1.50 each
Tested ..... 2.25 each; 25 or more, 2.00 each
Select Tested ..... 2.65 each; 25 or more. 2.25 each
Breeders .....$5.00 to $15.00

ITALIANS - CARNIOLANS - GOLDENS

NUECES COUNTY APIARIES, CALALLEN, TEXAS

For American Foul Brood Use

Dr. Hutzelman's Solution

The beekeeper who has American foul brood in his apiary, must either destroy his combs or disinfect them.

Combs destroyed must be replaced by new frames, which require nailing together, wiring, fastening foundation, and, last of all, the great labor of the bees in drawing out the foundation.

Disinfection can be done with less than half the labor of preparing new frames with foundation. Besides, the great labor of drawing out combs by the bees is saved.

The cost of disinfecting solution is also less than half the cost of new frames with foundation.

Which way are you taking?

Write today for information, which will be sent on request.

Prepared solely by the originator of the process.

J. C. Hutzelman, Glendale, Ohio

Canadian Distributor, Dr. C. J. Devins, Aurora, Ontario.

The Joy of a Record Crop

Is the Aftermath of a Season Well Spent

LET US REQUEEN YOUR COLONIES WITH FOREHAND'S 3-BANDS. THEY ARE QUEENS OF THE BETTER KIND.

We believe this is the most liberal offer ever made on bees and queens. Supply your needs from these prices, test them in your yards, and, if they are not satisfactory, every cent of your money will be cheerfully returned. NO ARGUMENT ABOUT IT; THEY SATISFY OR THEY DO NOT. Order now and get your queens and bees when you want them. 10 per cent of the full amount with order is all that is necessary at time of booking.

Untested: $1.00 each; 10 or more, 90c each; Sel. Untested, $1.25 each; 10 or more, $1.15 each. Tested, 1 to 4, $2.50 each; 5 to 11, $2.45; 12 to 24, $2.40 each; Select Tested, 1 to 4, $4.00 each; 5 to 11, $3.95 each.

	1	25 and up
One lb. pure Italian bees with young queen	**$3.00**	**$2.90**
Two lbs. pure Italian bees with young queen	**5.00**	**4.75**
Three lbs. of pure Italian bees with young queen	**6.00**	**5.75**

Write for prices on larger lots.

All bees and queens guaranteed to reach you in good condition in the U. S. and Canada.

N. Forehand, Ramer, Alabama, U. S. A.

Townsend's Bulletin No. 5

An old doctor had practiced medicine all his life, and a time came when he had to turn his practice over to some one else. In this case the party taking over the practice was a young man direct from a medical school. In taking hold of the old doctor's business, the young man remarked, "I'll begin where you left off in this great work." The old doctor replied, "You will begin at the bottom where I began and with a long practice, work yourself up to where I left off."

The doctor's case is the usual one practiced in the breeding of queens. Most breeders begin their queen-rearing with breeders that may be pure and apparently all right, but if the breeding were traced back a few years, no telling what the breeding may have been; and the would-be breeder, like the young doctor, has to begin at the bottom, and breed up a strain of bees to his liking. How different it would have been, had this breeder began with a "line bred" stock, like the J. W. K. SHAW & CO., Loreauville, La., has bred up! This stock of three-banded Italian bees have been "line bred" for a third of a century. Beginning with stock imported by themselves, they have bred in line all these years; so, if one were to begin the rearing of queens, either for one's own use or for the market, and begin with this SHAW "line bred" stock, they would "begin where the old doctor left off" and save a lifetime effort in breeding up a superior strain of Italian bees.

The present management will continue to sell queens at a very low price, considering the quality of the stock he has to offer, for he does not want a single beekeeper to feel that he can not afford a breeding queen of this "line bred" stock on account of the price it costs. The price of Select Tested queens for breeding purposes for July will be as follows:

XXX Extra Select Tested for breeding purposes, $10.00.

XX Select Tested for breeding purposes, $8.00.

X Tested Queens, taken off the market.

Select Untested Queens, $2.00.

6 Select Untested Queens for $10.00.

12 Select Untested Queens for, $18.00.

24 Select Untested Queens for $30.00.

Quantity lots of Untested Queens, when we have them, a matter of correspondence.

If you order a XX Select Breeding Queen you will get the best breeding queen we have—only if you send us $10.00 and order the XXX Extra-Select Tested Breeding Queen, we will go out into the yard and select just such a queen as we ourselves would select for our own use, and mail her to you. Breeding queens will be shipped by express in nuclei, if you prefer to pay the express and get them that way.

All of our breeding queens and most of our Untested Queens are daughters of "Lady Shaw," which means the very best stock of three-banded Italian bees to be had.

Address all orders to E. D. Townsend, Loreauville, La. Successor to J. W. K. Shaw & Co.

XUM

More Money for Your Honey

The big secret in the marketing of your honey crop and realizing a profit is in the use of a container that is neat and attractive.

We have made some decided changes in our line of containers during the past year, and for your benefit. The Root Lithographed Honey Pail, the new wood shipping case for comb honey, the new labels, etc., are all worthy of your inspection.

COMB HONEY CARTONS.

The biggest talking point that you can use in selling your comb honey is that it is packed in a sanitary carton where it is free from dust and flies. Our honey carton is printed in two colors with a special engraved design on the front.

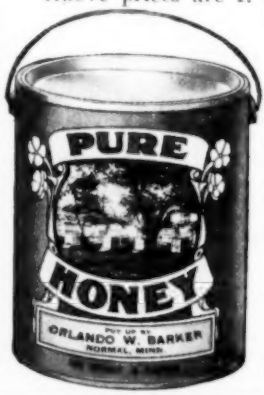
Style of Carton.	Size of Section.	Price per 100.	1000.
Folding cartons, printed,	4¼x1⅞, 4¼x1½, 4x5x1⅜	$1.20	$10.00
Danz. or slip cartons,	4¼x1⅞, 4¼x1½, 4x5x1⅜	1.10	9.00
For printing name and address on cartons		1.50	3.00
For plain cartons with no printing deduct		.10	1.00

WHITE GLASS JARS.

Honey should be marketed in clear white glass jars if the beekeeper is to obtain the best price for his product. Our white glass jars are fitted with lacquered tin caps lined with thick wax paper disks; packed in reshipping cases.

16-oz. net, 24 in case, shipping weight 18 lbs. $1.40
32-oz. net, 12 in case, shipping weight, 12 lbs. 1.05

Above prices are f. o. b. Medina, Chicago, Indianapolis, New York, Philadelphia and Norfolk.



ROOT HONEY PAIL.

Our new lithographed honey pail is the most attractive tin honey container on the market. This new pail in bright colors, with its permanent label, is always advertising your honey even when empty. Your name and address stenciled free on lots of 100.

2½-lb. lithographed cans, 50 to 500, $6.25 per 100; 500 or over, $5.95 per 100.

5-lb. lithographed pails, 50 to 500, $10.75 per 100; 500 or over, $10.25 per 100.

Shipment made from factory in West Virginia. Prices subject to change without notice.

Write for Label Catalog, Stationery Catalog!
FREE----"How to Sell Honey"----FREE

More Money for Your Honey!

FRICTION-TOP CANS AND LABELS.

The roadside honey stand demands a cheap container and our plain tin cans and pails with friction tops are ideal. A private label, selected from our label catalog, will add much to the attractiveness of the package. Offered for shipment in original packages. Write for prices.

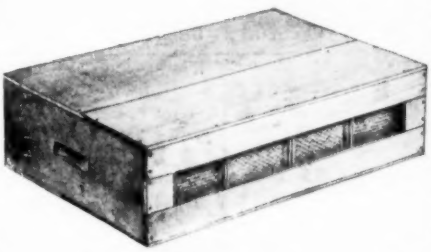
FIVE-GALLON (60 LBS.) SQUARE CANS AND SHIPPING CASES.

The five-gallon can is the favorite container for shipping extracted honey. Put up in strong reshipping cases.

5-gal. cans (2 in a case), f. o. b., Medina or West Virginia, 10 cases, $12.00. 50 cases, $57.00; 100 cases, $110.00.

COMB-HONEY DISPLAY CASES.

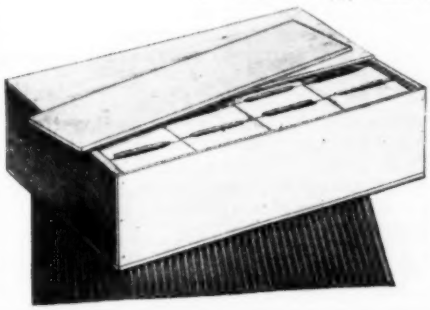
Every person selling comb honey should have a nice, neat display case with glass front. Made of white basswood, it adds dignity to your product. Write for prices.



CORRUGATED PAPER COMB-HONEY SHIPPING CASE.

Made according to the railroad specifications. The partitions are made of corrugated paper, and cartons can be used by removing every other partition—shipped in flat. Must be crated in wooden boxes or carriers for shipping.

4¼ x 4¼ x 1⅞, $2.25 for 10; 100, $21.50.
4¼ x 4¼ x 1½, 2.00 for 10; 100, 19.00.
4 x 5 x 1⅜, 1.95 for 10; 100, 18.50.



WOODEN SHIPPING CASES.

The railroads demand that comb honey, however packed, be shipped in wooden boxes. Comb honey packed in our new wooden case, with corrugated paper pads above and below, can be reshipped at once without recrating. Wooden shipping cases in lots of 10 K. D., 35c each. Corrugated paper pads (single face) 11¼ x 17 inches, 1c each.

THE A. I. ROOT COMPANY

WEST SIDE STATION

MEDINA, OHIO, U.S.A.

QUEENS *Knight's Queens* QUEENS

are Line-Bred, Pure Three-Banded Leather-Colored

For hardiness, prolificness, gentleness and honey-gathering qualities they cannot be excelled. Mr. C. F. Brown, Fairchild, Wis., writes: "The colonies headed with your queens wintered the best of any of them. Am 68 years old, having handled bees for 52 years. Think I am competent to know what constitutes a hardy strain. Yours are the best I ever owned."

Prices Balance of Season. Select (one grade) Untested.	
1 to 4 inclusive	$1.00 each
5 to 9 inclusive	.90 each
10 to 24 inclusive	.80 each
25 or more	.75 each
Tested Queens	2.00 each

Shipment can be made by return mail or on dates to suit purchaser. Safe arrival, pure mating, perfect queens, and perfect satisfaction guaranteed. No disease.

JASPER KNIGHT
HAYNEVILLE, ALA.

THE ADVANTAGE

of summer requeening should be considered now. In the summer you can get the best queens of the season at the lowest price of the season. You can get prompt delivery, which is not always possible in the spring. Weather conditions are more favorable for introducing queens and handling bees. You have in your colony a queen that is not worn out by a season's work to prepare it for winter. Therefore, it will be in condition early next spring to get the first nectar.

THE CRITICAL PERIOD

of a colony's life is during the winter and spring. The first and most important problem is to have them in proper shape for the early nectar. Colonies that go into winter with a good force of bees and plenty of stores will be ready for the early nectar. Summer requeening with Forehand's Three-Bands—the thrifty kind—will get your colonies in proper condition for the winter.

WE CAN SUPPLY YOU PROMPTLY

with our THRIFTY strain of bees. Thirty-one years of commercial queen-rearing enables us to supply you with the right kind of queens. The proper equipment, properly handled, gets the queens to you on time. RUSH your order to us NOW, and we will get the right queens to you at the right time and the right price.

WE GUARANTEE pure mating and satisfaction the world over. Safe arrival is guaranteed in the United States and Canada.

Write for our helpful hints on summer requeening. No obligations.

	1 to 11.	12 to 25.	25 to 99.	100 up.
Untested Queens	$0.90	$0.75	$0.70	$0.60
Select Untested Queens	1.00	.90	.85	

Other grades quoted upon application.

W. J. FOREHAND & SONS, FORT DEPOSIT, ALA.

Achord Queens HONESTLY BRED HONESTLY ADVERTISED HONESTLY PRICED

Superior honey-producing stock. Bred in two of the largest, best equipped queen-rearing apiaries in the South. Vigorous, nicely marked, good-natured, three-banded Italians. Promptly mailed to you in large, clean cages with 1923 inspection certificate.

Select Untested, $1 00 each; 5 for $4.50; 10 for $8.00;
twenty or more, 75 cents each. Select Tested, $1.50 each.

Safe arrival guaranteed, if you will assist us by asking your rural carrier to notify you of their arrival and not leave them in a hot mail box. Large or small orders filled with equal promptness, with queens guaranteed to please you.

W. D. ACHORD - - Fitzpatrick, Alabama.

Superior Italian Queens

We have our usual number of nuclei running, and will have 100 queens per day for balance of the season. While we can't promise to fill your order by return mail, we feel that we have a pretty good chance to do so. If we can't fill it within a few days we will advise you. We have been producing over 17,000 queens per year, every one of which has been guaranteed to give satisfaction, and our replacements of unsatisfactory queens have been next to nothing.

Our Guarantee of Queens

We guarantee safe arrival and satisfaction on all queens, and will refund your money or replace any dead or unsatisfactory queens, provided you return her at once in the cage you received her in, with your name and address on it.

We are in position to fill your orders for packages and nuclei promptly and will be able to furnish them through the summer months.

Prices of Packages, Nuclei and Queens

	In lots of 1 to 25.	In lots of 25 or more.
One-pound packages	$3.25	$3.00
Two-pound packages	4.50	4.00
Three-pound packages	5.50	5.00
One-frame nuclei	3.50	3.00
Two-frame nuclei	4.50	4.00
Three-frame nuclei	5.50	5.00

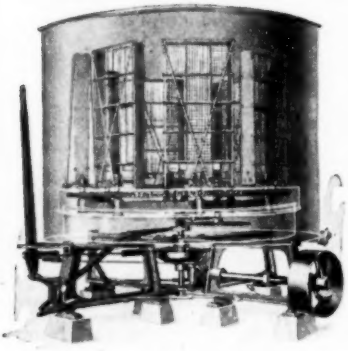
One Untested Italian Queen, $1.25; 10 Untested Italian Queens, $10.00. Prices of 100 on application. After June 15, 25c each less on Untested. One Tested Italian Queen, $1.50.

The Stover Apiaries, Mayhew, Miss.

XUM

49 YEARS FOR PROGRESS IN BEEKEEPING—No. 7

The Power Extractor that Never Breaks Honeycombs



The white lines in the photograph show the large capacity tank in which the honey is collected. Those who examine the extractor are amazed at the rigidity of the baskets : nd the strong, safe construction throughout.

Lewis-Markle Extractors are available in three sizes and styles to fit all power requirements. Save time—make sure of your ability to handle the honey flow quickly and efficiently by securing the most advanced and successful type of extractor known. Write for styles and prices, indicating number of colonies you operate.

If you are not already buying Lewis Beeware, drop us a card and we will furnish the name of the nearest dealer to you.

LEWIS-MARKLE Power Extractors are fundamentally different from all others. They can not "slam" the baskets in reversing, as the Markle baskets are hinged in the center. The reversing mechanism is entirely separate from the operating mechanism and is so timed that it takes three full seconds at full speed for the baskets to entirely reverse. The machine reverses at full speed and stops automatically. This principle relieves the machine from wear and tear. The result is long life, light depreciation, with enormous honey extracting capacity.

"Having extracted 100,000 pounds of honey in 1922, with two Markle Extractors," says Morley Pettit, Georgetown, Ontario, Canada, "I naturally believe in the Lewis-Markle because of its efficiency and ability to reverse at full speed without damage to the combs."

"With a Lewis-Markle Extractor I last year extracted as high as 800 pounds of honey in 40 minutes," says Chris Buitenhoff, of Manhattan, Mont. "It took 2 men working at top speed uncapping combs to keep up with the extractor."

"The cleanliness of the Lewis-Markle Extractor especially appeals to me," says Frank Rauchfuss, Denver, Colo., Secretary of the Colorado Honey Producers' Association, whose clean methods and rules for grading honey are internationally known. "The baskets and tank can be removed instantly without unfastening anything; this permits of easily cleaning the machine as often as necessary."

"As a mechanical engineer," says C. W. Aeppler, Oconomowoc, Wis., who operates about 400 colonies of bees, "the sturdiness of the Lewis-Markle Extractor and its freedom from vibration have especially impressed me. This indicates minimum depreciation per year."

LEWIS BEEWARE

G. B. LEWIS COMPANY

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